USE OF A PROTOCOL TO IMPROVE EXAM STANDARDIZATION AND CLINICAL SUPPORT FOR SANE PRACTITIONERS IN MONTANA

by

Elizabeth Anne McKinney

A scholarly project submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Nursing Practice

in

Family Nurse Practitioner

MONTANA STATE UNIVERSITY
Bozeman, Montana

May 2024

DEDICATION

This project is dedicated to the victims and survivors of sexual assault.

.

ACKNOWLEDGEMENTS

First, I want to acknowledge my faculty member, Carrie Miller, who provided the academic and emotional support needed to complete this project.

I want to acknowledge my partner, John Carl, and my parents, Matt, and Joanne. Over the last four years they eased my stress with meals, visits, treats, encouragement, financial support, assignment editing, and others too numerous to name. I am so grateful for you all.

TABLE OF CONTENTS

TABLE OF CONTENTS CONTINUED

TABLE OF CONTENTS CONTINUED

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

ABSTRACT

Statement of Problem: Sexual assault is a common occurrence throughout the United States with significant side effects. Reporting shows that one in every six women, one out of thirty-three men, one in nine girls, and one in 20 boys are victims of sexual assault. These rates are greater among Native Americans, incarcerated individuals, military members, and those who identify as LGBTQ+IA. Side effects are many and include physical, psychological, and financial repercussions. Research suggests that sexual assault nurse examiners (SANEs) improve not only the judicial outcomes but improve patient's sense of well-being and reduce secondary traumatization. A needs survey administered to a Southeast Montana hospital SANE program indicated provider confusion when training to do the SANE exam due to a lack of standardization among how providers completed the exam.

Methods: A needs survey administered to a Southeast Montana hospital SANE program indicated provider confusion when training to do the SANE exam due to a lack of standardization among how providers completed the exam. Using recommendations provided by the National SANE Protocol, a quality improvement plan was created to evaluate the implementation of an adult/adolescent exam protocol, and a flowchart based on the protocol.

Participants completed a pre-and post-survey to determine whether the protocol improved exam standardization, exam clarity, staff awareness of exam policy and procedures, quality of exam, confidence in practice, and clinical support of SANEs.

Results: Survey respondents were primarily novice and advanced beginners to the SANE role. Prior to the intervention They had low confidence, low levels of clarity surrounding exam requirements, and a poor sense of clinical support. They report collecting high quality evidence and completing exams in line with policies and procedures. Following the intervention all survey elements increased in level agreement whether there was high agreement pre – intervention.

Conclusion: The availability of standardized clinical tools increases confidence, clarity, and support among SANE providers, which we theorize will improve retention of SANEs and evidence quality

CHAPTER ONE

REVIEW OF THE LITERATURE

Introduction

Background

A significant public health problem, sexual assault leads to both acute and chronic health concerns for victims. Acute injuries may include bruising, lacerations, human bites, unwanted pregnancy, sexually transmitted infections (STI), anxiety, depression, and suicidality (Centers for Disease Control, 2022). Acute injury has the potential for additional sequelae, including soft tissue infection, pelvic inflammatory disease, loss of fertility, and suicide completion if not medically treated following assault (Centers for Disease Control, 2022; Rape, Abuse, and Incest National Network, 2023). Chronically, unwanted sexual contact can lead to post-traumatic stress disorder, medical disease due to chronic stress, adverse lifestyle choices including smoking, alcohol, and drug use, and revictimization (Centers for Disease Control, 2022; Rape, Abuse, and Incest National Network, 2023). Long-term stress causes over-exposure to cortisol, which plays a factor in the development of heart disease, stroke, memory issues, digestive issues, and suppression of the immune system, which can, in turn, open the patient up to more complications (American Psychological Association, 2022) Researchers suggest specialized nurse examiners improve the frequency of DNA collection but can decrease secondary victimization by healthcare and law enforcement members. Furthermore, victims may feel a greater sense of comfort, control, and belief (Patterson et al., 2022; Patterson et al., 2020; Sheeran et al., 2022). However, inconsistent training of these specialized providers, or sexual assault nurse examiners (SANE),

has left room for significant variation of exams among different providers. The rural nature of many SANE programs contributes to this inconsistency, as hands-on practice, access to preceptors, and ongoing clinical support may prove difficult to acquire or obtain (Sheeran et al., 2022).

Significance

The issue of sexual violence remains prevalent in the United States (US), especially among certain groups. One out of every six women, one out of 33 men, one in nine girls, and one in 20 boys is a victim of sexual assault, including attempted or completed rape. Girls between ages 16 and 18 are at the highest risk, four times more likely to experience sexual assault than the general population. Native American descent, LGBTQ+, an incarcerated individual, and military members see higher rates of victimization. (Rape, Abuse, and Incest National Network, 2023).

Sexual assault leads to detriment of the victim, their loved ones, their communities, and on society (National Sexual Violence Resource Center, n.d). Cost to victims include both physical and material losses. The Rape, Abuse, and Incest National Network (n.d.) describe symptoms of rape trauma syndrome including anxiety, mood swings, helplessness, fear, depression, rage, trouble with eating and sleeping, denial, withdrawal, hypervigilance, isolation, sexual dysfunction, concentration difficulty, and flashbacks. Additional medical concerns including pregnancy risk and testing or treatment for sexually transmitted infections may arise. Physical and mental symptoms secondary to sexual assault can lead to significant financial burden for the victim with increased need for healthcare services, mental health services, and potential time or productivity lost at work (National Sexual Violence Resource Center, n.d).

Research suggests that the cost of victimization averages 122,461 dollars over a lifetime due to expenses and lost work. Additionally, research suggests disrupted work and education following an assault contributes to a 241,600 dollars income loss over the lifetime (National Sexual Violence Resource Center, n.d).

Loved ones of the victim may struggle with survivors' guilt and difficulty understanding what happened. Victim sexual dysfunction can lead to further relationship strain. The community and society are affected by lost trust and sense of safety leading to widespread fear and a sense of oppression (National Sexual Violence Resource Center, n.d).

The need for adequate sexual assault care greatly effects the state of Montana. In 2019, 121.9 out of 100,000 residents reported a sexual assault. This rate was six times higher for children (Martin, 2019). SANE providers have demonstrated to improve timeliness of evaluation, thoroughness, and accuracy of exam. The presence of SANE providers increases DNA collections, the number of criminal charges, convictions, and increases sentence length (Barron, et al., 2023; Sheeran et al., 2022).

Literature Search

Database Search

Web of Science was the primary search database, containing Medline, some CINAHL, and Psychinfo articles. The Montana State University librarian assisted in the search. The article search continued until those examined were already collected, not relevant, or out of date. Following this, an additional search was completed on CHINAL and Cochrane Library to ensure all relevant articles were collected. This search yielded 20 items in total. Please see appendix A for PRISMA diagram.

Search terms include **sane exam*** AND **train*; sexual assault nurse exam*** AND **standardization or protocol or procedure**; Sane **exam*** AND **standardization or protocol or procedure;** sexual assault nurse examiner or SANE AND protocol; and finally, sexual assault nurse exam* OR forensic nursing AND protocol. Article search focused on articles published between 2018 to the present.

A second literature search to discover key historical articles or evidence. There were no year restrictions for this search. Search terms include SANE AND history; sexual assault nurse examiner AND history; history AND development of SANE, Laura Slaughter AND SANE. Data found from these searches included primarily gray literature and was not included on the PRISMA (appendix A).

Exclusion Criteria

Given the few available articles on this topic, the author imposed limited exclusion criteria. Criteria for exclusions include non-English articles, studies completed outside the United States, years of publication outside of 2018 to 2023, a sample population other than nurses, and articles discussing simulation as an intervention for training improvement.

Inclusion Criteria

Articles published from 2018 to 2023; articles discussing SANE nurse training, retention, curriculum, or protocol creation; research articles; sample population of nurses; and peer-reviewed.

Results

Few research studies on the topic of SANE nurse training exist. Even over the past 10 years only three quasi-experimental articles exist evaluating SANE training outcomes (Sheeran et al., 2022; Marks et al., 2017; Patterson et al., 2014; Patterson & Resko, 2015a, 2015b; Witt et al., 2015). Article search identified ten articles meeting this project's inclusion and exclusion criteria: one cohort study, one quasi-experimental study, four descriptive studies, and three qualitative studies. The author included one literature review as it provided valuable research information completed within the last 20 years (Barron et. al. (2023); Bouchard et. al. (2022); Gangon et. al. (2018); Langess et. al. (2022); Nathan & Ferrara (2020); Patterson et. al. (2020); Patterson & Resko (2020); Sheeran et. al. (2022); Torregosa et. al. (2023); Wolf et. al. (2022). The review yielded no higher levels of evidence. All studies utilized convenience samples, which adds potential sample bias and may limit generalizability or transferability. No studies utilized comparison groups, which threatens internal validity. Four studies had sample sizes of less than 100, limiting statistical power. Qualitative studies included a discussion of data saturation, coding rigor, and the possibility of transferability. Quantitative studies that did include statistical analysis-maintained rigor and provided discussion of any limitations. Themes identified in the research are discussed below.

Definitions

To understand the discussion of SANE care several definitions are required.

Trauma-Informed Care

Trauma-informed care involves a patient-centered, primary goal of improving the patient's sense of control and safety by offering choices and adjusting to every individual's comfort with space, touch, and other needs, building rapport, trust, and comfort for the patient (Patterson et al., 2020).

Prosecution - Focused Care

Prosecution-focused care involves an over-focus on medical and legal responsibilities without a balance of a patient-centered approach described above by viewing the primary goal as successful prosecution (Patterson et al., 2020).

Literature Review

History

SANE nurses have existed since the late 1970s with initial programs beginning in Memphis, TN; Minneapolis, MN; and Amarillo, TX in 1976, 1977, and 1979 in response to both nurse and patient acknowledgement of gaps in care (Office for Victims of Crime, nd). However, little progression in the role occurred until 1990 propelled the work and publication of Lynch (1990). The integrated practice model for forensic nursing offers a conceptual understanding of the forensic nurse role. Lynch's primary assumption in the model is that integrating social science, nursing science, and legal science into the role of the forensic nurse benefits the patient, the healthcare organization, the legal organization, and society (Lynch, 1990). The theoretical themes of Lynch's model include cultural care; dimensions of laws; role clarification, behavior,

and expectations; interactionism; patient advocacy; problematic social situations; reciprocal social interaction (Valentine, 2014).

Lynch's (1990) description of a theoretical foundation for the forensic nursing role led to acknowledgement of the nursing specialty by the American Association of Forensic Science in 1991 and creation of the International Association of Forensic Nurses (IAFN) by 72 pioneers of the specialty in 1992 (Valentine et al., 2020). Since its founding, the IAFN has grown to over 6,000 members worldwide (IAFN, 2023). The American Nurses Association officially recognized SANE nursing as a specialty in 1995. The Office for Victims of Crime reviewed research developed surrounding SANE nursing and realized these programs improved patient care and evidence collection lead to the creation of the SANE Development and Operation Guide in 1997 (Office for Victims of Crime, nd).

SANE programs would not have been successful without the support of the physician L. Slaughter. Slaughter advocated to other physicians for nurses to perform the SANE exam and established one of first sexual assault response teams. Slaughter improved understanding and assessment of genital injury with use of a colposcopy. Through her work examiners recognized normal variation and prior trauma could affect findings of a SANE exam (Morse, 2019).

Despite the rapid growth of the specialty during the 1990s this work is still being pioneered today with multiple gaps in research and widespread variation of program operations. Continued pressure for improved education on the topic and maintenance of existing programs remains a high priority (Sheeran et al., 2022).

Training and Competency Factors

Inconsistent Education: SANE providers identified a lack of training as one barrier to providing high-quality care (Barron et al., 2023). Practicing SANEs indicated they believe inadequate training led to missed opportunities for evidence collection. Additionally, a lack of continuing education limits competency maintenance. Only six states require continuing education on the care of traumatized patients (Wolf et al., 2021) despite the 2016 Survivor Access to Supportive Care Act directing the Department of Health and Human Services to establish national training and continuing education programs to improve access to trained SANEs (Sheeran et al., 2022). Additionally, no requirements for certification renewal exist, such as those for cardiopulmonary resuscitation (CPR) or advanced cardiovascular life support (ACLS). Although routine reviews of regularly unused skills are necessary to maintain competency, no literature recommends the frequency of training review for SANE skills (Sheeran et al., 2022).

Both graduate and undergraduate nursing programs have minimal education on the role of sexual assault nurses and the care of sexually assaulted patients. Despite urging in 1999 by the American Association of Colleges of Nursing to include forensic nursing in their curriculum, to this day, nursing programs have not, or only minimally, contributed to SANE training, with 83% of practicing SANE nurses reporting that their college courses did not teach forensic nursing (Torregosa et al., 2023; Sheeran et al., 2022). The dismissal of these recommendations by educational institutions and regulating bodies has contributed to the chronic shortage of forensic nurses, ignoring survivor reports that improved training on trauma-informed care and

interdisciplinary communication would have improved their experiences (Nathan & Ferrara, 2020; Gagnon et al., 2018).

Method of Training: Most SANE training programs consist of a five day in-person or 40-hour online didactic course and clinical training per their organization. This training method leads to multiple challenges, especially when living in a rural setting where access to in-person courses is limited or several months may occur between training and seeing their first patient. Reinforcement of knowledge improves the amount retained. Typically, with this type of training the trainee's knowledge increases immediately following training but decreases after three months (Patterson & Resko, 2020; Sheeran et al., 2022). Using lectures with role-play scenarios and simulation improves confidence and knowledge retention of SANE exam components (Nathan & Ferrara, 2020).

Patient-centered care provides victims with a sense of safety, reassurance, and control. Survivors have reported more positive experiences when given trauma-informed care. However, only a quarter of newly trained SANEs enter the workforce prioritizing the patient's emotional and healthcare needs rather than evidence collection (Patterson et al., 2020). This role dichotomy occurs when training programs focus too heavily on evidence collection and prosecution. Prosecution-focused training programs provide less comprehensive medical care and have higher rates of burnout in their employees (Patterson et al., 2020; Gagnon et al., 2018).

When training and orientation focus on providing patient-centered, trauma-informed care the exam goal shifts from assisting law enforcement (Patterson et al., 2020). Trauma-informed care focuses on offering and respecting choices to assist the survivor to move from vulnerability to safety. Prosecutorial focused exams prioritize complete and accurate evidence collection over

acute needs of survivors (Patterson et al., 2020). Nearly half of women who interacted with the criminal justice system following an assault found these interactions not only unhelpful, but actively hurtful in their recovery process. These women recommended training for both medical and law enforcement branches focus more heavily on interacting with sensitivity, compassion, and understanding of trauma (Gagnon et al., 2018).

Holistic training teaches nurses that their interaction with patients affects survivor healing and their willingness to seek follow-up care or legal action (Patterson et al., 2020). When patient care is the center of the exam, SANEs view their work as more valuable and have less anxiety, reflecting on their previous experience caring for patients (Patterson et al., 2020).

Confidence in Practice: One-third of nurses feel unprepared to practice as a SANE after completing training and feel additional hands-on practice would be beneficial (Sheeran et al., 2022). Years of nursing experience increase confidence and knowledge retention following a didactic course (Patterson & Resko, 2020). While nurses feel confident six months following their training, their confidence decreases over time, with increasing negative attitudes about the work. Specifically, SANEs need more confidence in the detailed documentation required for these exams (Bouchard et al., 2022; Torregosa et al., 2023).

Lack of education in undergraduate programs, missing requirements for continuing education, and decreasing clinical support after the first six months of practice lead to decreased confidence in SANE practice (Torregosa et al., 2023).

Written Protocols: Written protocols and procedures improve exam thoroughness, documentation, referrals, adequate treatment for, STIs, and pregnancy prevention. However, nurses indicated a lack of knowledge surrounding existing protocols (Barron et al., 2023). The

nature of an exam following sexual assault can lead to a sense of revictimization when not carried out skillfully. Standardized education and practice are needed to prevent this negative side effect (Nathan & Ferrara, 2020). While there is a national protocol for sexual assault examinations, only about one-third of SANEs perceive this as being implemented in their area, leading to a wide variation in the amount of training required by the state (Langness et al., 2022; Sheeran et al., 2022). In their study of the long-term impact on confidence and attitudes of SANE trainees Torregosa et al. (2023) found that forty-four percent of SANE nurses indicated they were not sure if a written protocol existed in their organization. This finding further suggests confusion surrounding protocol use in SANE programs noted by Nathan & Ferrara (2020).

Retention

Lack of Support: SANE nurses report a lack of support as a risk factor for burnout related to vicarious trauma causing emotional and physical exhaustion (Bouchard et al., 2022; Terregosa et al., 2023). Symptoms of burnout include survivor's guilt, hopelessness, mental health disorders, sleeping disorders, weight gain, chronic pain, reduced capacity for clinical decision-making, and social isolation (Terregosa et al., 2023). Social support, administrative support, and clinical supervision influence these physical symptoms by reducing compassion fatigue and burnout (Terregosa et al., 2023).

High burnout contributes to the national chronic shortage of SANEs further stressing already unsupported and burned-out nurses (Sheeran et al., 2022). For instance, even when nurses are knowledgeable regarding national protocols for SANE exams, implementation is limited due to poor support from organizations (Langness et al., 2022) Effects of support gaps are seen in poor SANE retention rates of only 8% of SANEs practicing two years after training

completion (Bouchard et al., 2022). Socially, nurses feel supported when the program creates space for co-workers to give encouragement, debrief, and connect outside of work (Bouchard et al., 2022).

When adequately supported in these ways, SANEs have higher levels of confidence and can continue doing this challenging work. This knowledge holds important implications for interventions to improve employee retention and the availability of this specialized care (Torregosa et al., 2023; Bouchard et al., 2022).

Dedicated Versus Nondedicated SANE: Only approximately half of emergency departments (ED) in the US have a dedicated forensically trained nurse on staff (Wolf et al., 2021) despite evidence and survivor reports that indicate that those without specialized training were more likely to cause revictimization (Patterson et al., 2020; Gangon et al., 2018). The presence of a dedicated SANE improves survivor access and referrals to community resources and leaves them feeling psychologically cared for. SANEs who take on multiple roles within their organization in addition to their SANE work have higher rates of burnout due to poor work-life balance and on-call schedules, indicating the importance of dedicating a forensically trained nurse to this role (Tororegosa et al., 2023).

Discussion

Forensic nursing is a relatively new specialty with the most significant developments occurring in the 1990s. Advances in the field were championed by the work of Lynch (1990) who created the first framework for SANE nursing and Slaughter who not only advocated for the ability of nurse examiners but contributed valuable knowledge to the understanding of genital injury (Morse, 2019). Evidence from the 1990s until today suggest that SANE nurses improve

the care of sexually assaulted patients and numbers of trained SANE nurses have expanded. Despite these facts, the role has struggled to gain traction in healthcare institutions and educational bodies throughout the last three decades. Poor traction has led to gaps in education and practice.

Multiple factors contribute to these gaps. Even with various governing bodies urging, to this day, there are no requirements for SANE continuing education, certification renewal, or college courses. Although evidence suggests that knowledge retention improves with simulation and role play, SANE education courses remain largely didactic. Educational gaps can leave SANEs feeling insecure and uncertain in their role, leading to frustration and burnout. Especially in the setting of insufficient education, written protocols improve confidence and competence in practice. Unfortunately, both the existence and knowledge of written protocols among SANE programs is limited. Confidence and protocol use is improved with adequate social, organizational, and clinical support. Part of poor organizational support is the low rates of dedicated SANE nurses. Many SANEs must work in multiple positions within the organization to continue with SANE work. Without these support systems in place SANEs will quickly burn out and have short careers in the position.

Deficient education, protocols, organizational and clinical support leads to decreased confidence and ultimately burnout in SANEs. Burnout leads to high turn-over rates and chronically low numbers of practicing SANEs. Hospitals need to act in supporting their SANE programs by opening dedicated FTEs for the role, offering standardized and adequate training, having easy-to-access and well-understood protocols, and providing relevant continuing education. SANE program leaders must implement regular meetings and social events to

decrease the feelings of isolation experienced by many SANE practitioners to improve retention rates.

Conclusion

Training inconsistency, type of training, and lack of university driven forensic education affects SANE nurse confidence in practice. Less than half of SANE nurses are aware of either their hospital protocols or the national SANE protocol. Even when protocols exist and nurses are aware of them, they still often struggle to implement them lacking support from the organization. Lack of support and the requirement for SANES to take on multiple roles increase burnout levels. Educational and organizational issues lead to high SANE turnover and decreased quality of exams.

CHAPTER TWO

QUALITY IMPROVEMENT PROPOSAL

Introduction and Problem

Introduction

This quality improvement project will utilize previously created national procedures to supplement existing standards of care in the SANE program to improve exam standardization, methodology, patient-centered care, and support the SANE providers and the patients they serve (United State Department of Justice Office of Crimes Against Women, 2013).

Globally, one in three women experience sexual violence at least once in their lifetime. However, only 40% of these women seek professional help, and 10% report the crime to the police (UN Women, 2023). The United States follows this international trend, with one in three women experiencing sexual violence, as well as one in four men.

As the literature review suggests, SANEs play an essential role in promoting long-term recovery for patients through patient-centered, high-quality exams. Unfortunately, the literature also indicates that the amount of trained, currently practicing SANES remains chronically deficient to meet the scope of the problem, and training often fails to support SANEs to practice for the long term. This trend rings true in Montana as well. Currently, no exhaustive list of SANE programs exists (IAFN, 2023). The IAFN has the most extensive database (IAFN, 2023). According to the IAFN site, Montana has five SANE programs functioning as of this quality improvement project, meaning only a handful of trained SANE providers provide SANE care to a population greater than 1 million (United States Census Bureau, 2021; IAFN, 2023), or

approximately 30,000 patients. SANE programs must set nurses up for success and sustainability by providing standardized exam methodology during orientation and giving patients a professional, healing exam (Bouchard et al. 2022).

Problem Statement

During the needs assessment for this project SANE nurses report confusion during training due to lack of standardization with completing SANE exams. As the literature review suggests, poor understanding of the SANE exam process can lead to poor patient experience, staff frustration, and inability to bring cases to trial due to missed evidence. With this information, the problem this QI project seeks to address is that despite availability of exam protocols many SANE nurses either do not know they exist, or protocols are not fully implemented.

Implementing and disseminating a protocol for the SANE exam will improve exam thoroughness, documentation, follow-up, and treatment. The protocol will improve SANE exam standardization and decrease confusion of current and future SANEs.

A critical part of protocol implementation will include meeting with current and training SANE nurses to review the protocol information and provide written and intranet access to these job aids in a way that is easily accessible to nurses during a case.

Organizational Microsystem Assessment

The protocol implementation will take place at a non-profit hospital in Southeast (SE) Montana. Eighteen SANE RNs, including those in training, make up this hospital's SANE program. RNs in this SE Montana program have a minimum of two years of nursing practice prior to beginning training. All RNs had the opportunity to complete an online, anonymous

needs survey evaluating the positive and negative experiences with training for the role. Two themes emerged: lack of exam standardization, making precepting with multiple nurses confusing, and the need for clinical support after completing training. These survey results are consistent with issues seen in SANE programs throughout the country as evidenced in the literature review. Anecdotal information gathered from staff members of this hospital's SANE program indicates the average length of practice as a SANE nurse in this program is two years which is consistent with national data (Bouchard et al., 2022).

The program exists within the hospital's emergency department (ED), and nurses work on call, only coming in when needed. Call hours vary with some RNs only picking up a few times a year with the majority, working four 12-hour shifts per month. RNs work primarily alone with the patient until the exam is completed. No other trained SANE nurses are usually in the building. When pediatric cases come in, the exam, including genital exam and evidence collection is completed by the SANE nurse. Emergency Department physicians must briefly examine all pediatric cases but do not complete any invasive exams unless requested by SANE nurse. Physicians only see adult SANE patients if requested by the SANE RN. A medical doctor (MD) of emergency medicine oversees the program by reviewing cases and creating the standing order sets utilized by RNs during their exams. This MD is not involved in the exams. At various times within these programs history victim advocates have been present at the exam as well.

Victim advocates play an important role in the SANE exam and in the continued recovery of the patient. Services they offer include assisting the patient to sort through feelings, dispelling misconceptions of sexual assault, education on common responses to sexual assault, helping the victim to voice their concerns and needs, assisting with transportation, providing replacement

clothes, and connecting victim to support systems (US Department of Justice, 2013). Advocates go with patients through each step of the medicolegal process (US Department of Justice, 2013). Unfortunately, advocates were not allowed in the ED during the COVID-19 pandemic and reinstating the program has proved difficult. Even prior to the pandemic, advocate retention in this SE Montana town was poor.

The patient population seen by this SE SANE program is primarily adult women with ages across the lifespan but are most commonly younger than 25. The program also sees male and female pediatric patients and adult males, although these patients are less frequent. The population is consistent with national findings that those aged 16-18 are at highest risk (Rape, Abuse, and Incest National Network, 2023). Most patients are Caucasian or Native American. Again, this correlates to national data that Native Americans are more likely to experience sexual violence (Rape, Abuse, and Incest National Network, 2023). Specifically 56% of Native American women nationally report sexual assault (National Institute of Justice, 2016).

The director of a Glacier Country Montana SANE program agreed to discuss with this author what makes their program successful and why they maintain trained nurses. The director recommends focusing on ongoing support as they have found this more beneficial than orientation. This program is deemed successful and has shown sustainability throughout several years (MaryPat Hansen, personal communication, September 8, 2023).

Quality Improvement Model

A model of evidence-based practice changes, the Iowa model provides straightforward, easy-to-follow steps for implementing evidence-based practice. Decision pathways are included within the model to aid determination of the need for alternate project or solution. Prompts

encourage the reader to consider if the problem requires research instead of QI. The Iowa model was a good fit for this project as it follows the required steps of this scholarly project well. Steps include identifying triggering issues and opportunities; stating the question or purpose; forming a team; assembling, appraising, and synthesizing the body of evidence; designing and piloting the practice change; integrating and sustaining the practice change; and disseminating results. The flowchart provides the specifics required to meet these steps (Iowa Model Collaborative, 2017) (See Figure 1).

Specific Aims/ Purpose Statement

The purpose of this quality improvement initiative is to implement a SANE exam protocol in the SE Montana hospital SANE program. Primary goals include increased exam standardization, clear expectations of care, and increasing clinical support of SANE nurses. Secondary goals include improved patient care and quality of evidence. Goals outside the timeline of this project include streamlined, standard training of new employees, nurse retention greater than 2 years, increased used of DNA in prosecution, and improved conviction rates.

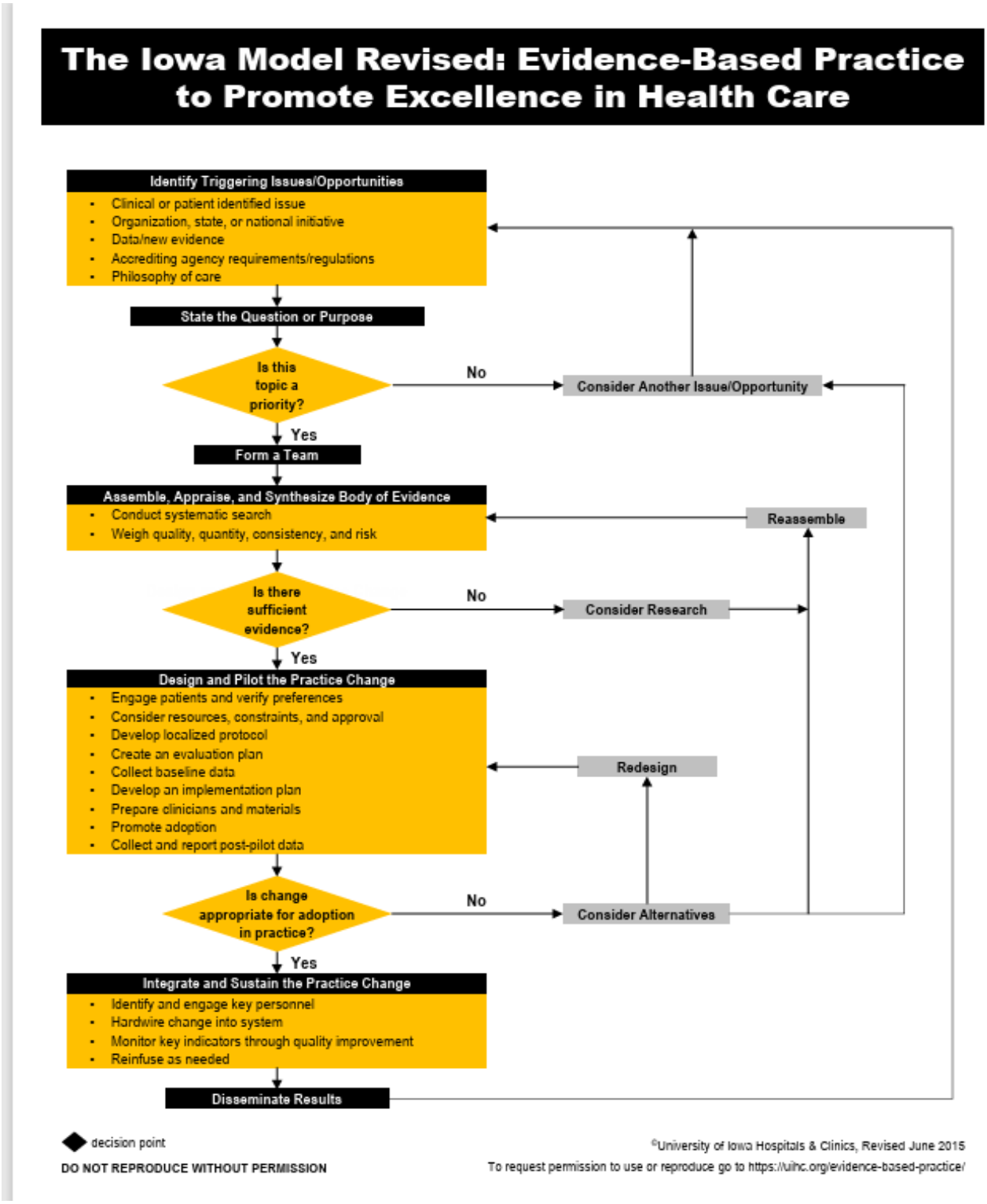


Figure 1: Iowa Model for Evidence-Based Practice (Iowa Model Collaborative, 2017)

Methods

Intervention and Implementation

Implementation Summary: An exam protocol will be implemented in the SE Montana SANE program. This protocol will utilize the National Protocol for SANE exams and will replace current hospital policy and procedures for SANE exams. The current policies and procedures do not utilize the National Protocol and have not been updated in some time. The intervention population will include 18 RNs currently working or training at the SANE department. Intervention implementation will occur in January 2024, and data collection will occur from January through mid-March 2024. Goals of intervention include to educate, integrate the National Protocol, and provide a usable tool for SANE exams. Data collection will occur via a pre-and post-implementation Likert scale survey. The survey was adapted from Kamalasanan, Sathiyamurthi, and Subbarayalu (2020) with additional questions added by this author (see appendix C). The overall Cronbach alpha of the original survey was 0.959. Currently no validated measure exists to measure SANE practice.

Intervention & Implementation: Utilizing the National Protocol and knowledge of the current practices of the hospital's SANE program, this author built an exam protocol that will be disseminated to the hospital's SANE nurses. Implementation will utilize step five of the IOWA model for practice change. The fifth step, design and pilot the practice change, includes developing localized protocol, engaging participants; creating an evaluation and implementation plan; preparing the nurses; promoting adoption; and collecting and reporting post-pilot data (Iowa Model Collaborative, 2017). The fifth step of Iowa Model includes developing localized protocol, which was completed during creation of exam protocol. Engaging and preparing nurses

will occur during education by providing them with background and evidence supporting the protocol. Promoting adoption will occur by collection of weekly feedback during data collection period to determine useability and attitudes surrounding the protocol. Collecting and reporting baseline and post-implementation data will occur via pre and post intervention survey and statistical analysis.

Prior to protocol implementation an anonymous, online, pre-intervention assessment will be sent to all nurses in the SANE program. The goal of pre-assessment is to determine RNs' perception of existing policies and procedures, training experience, patient and staff experience, and job role. Participants have one week to complete the survey. The approximate dates of survey administration are January 17th -24th, 2024. On approximately January 24th the author will provide education to SANE nurses reviewing protocol components (see appendix D for full protocol and appendix E for flowchart), how to utilize the tool, the background of the problem, and evidence supporting intervention. Implementation of the new protocol will begin following the education session on January 25th.

Following implementation on January 24th there will be eight weeks of protocol adjustment from approximately January 25th, 2024, to March 25th, 2024. Adjustment will be based on feedback collected from all RNs on a weekly basis. On March 25th the post-implementation survey will be sent out and participants will again have one week to complete this. Statistical analysis and completion of the project will occur April 1st. No budget is required for this QI project.

An expected barrier to the completion of this QI project is the motivation of staff members. All RN's have multiple jobs and families, and struggle to add something else to their

plate. Change often meets initial resistance even when there is evidence and need for the change. Involving staff members in protocol revision, providing education on evidence behind the protocol, and explanation of expected improvements in practice will combat this barrier (see appendix B for logic model). Barriers affecting data collection include the unpredictable nature of the schedule and patient presentation. While we cannot predict when patients will come in, this site rarely has more than 1-2 days in between patients so it is likely most days during data collection the nurses will have the ability to use the SANE exam protocol. Another concern with this unpredictability is that patient presentation may fall primarily on certain nurses' scheduled days and miss other nurses' days completely.

Evaluation and Analysis

To evaluate nursing attitudes and adoption of the protocol feedback will be collected weekly by this author via an anonymous, online, two question survey. Questions include: has implementation of the protocol influenced how you complete your exams and are there any points of the tool that are confusing or could be improved for ease of use? This qualitative data is for intervention improvement only and will not be included in statistical evaluation.

To evaluate intervention outcomes a pre and post intervention survey will be administered as described in implementation. The survey utilizes five Likert scale assessment questions created and validated by Kamalasanan et al. (2020) to evaluate quality perception by healthcare employees. Cronbach's alpha of this survey is 0.959. Only questions relevant to this QI were included in the adapted survey used in this project. Questions six through 13 were created by this author as no validated tool to measure SANE nurse experience and practice was found (see appendix C for entire survey). Data to be collected includes quantitative outcome

data via the Likert scale and binary yes/no questions. Descriptive data to be collected includes age, gender, ethnicity, years of overall nursing experience, and years of SANE nursing experience. All data will be collected via anonymous, online survey that participants must self-select to participate in by following a link sent through email. Responses are not linked to email address.

Statistical analysis of descriptive data includes the measure of the central tendency. Mode will be used to describe nominal variables, including gender and ethnicity. Mean will describe continuous variables, including age and years of experience. Frequency tables detailing the results of both pre- and post-tests will be compared to evaluate the change in each variable following the protocol's implementation. The previously described survey (Appendix C) will measure the project's short—and intermediate–term goals. Long-term goals are outside the project's time frame.

SMART GOAL #1: Clear expectation of practice		
- Create and disseminate written protocol, based off the National protocol, for SANE exam. - Include nurses in creation and feedback of protocol to increase investment. - Provide education on protocol steps. - Provide education of protocol evidence - Provide education of expected outcomes		
Data to be collected	*Method of collection and who is responsible*	*Planned data analysis*
Subjective reports pre and post intervention	Likert scale survey – collected by author	Wilcoxon signed-rank test

SMART GOAL #2: Standardized execution of exams		
- Using National SANE Protocol to create written protocol so all staff complete same steps. - Provide education on protocol steps. - Provide education of protocol evidence - Provide education of expected outcomes		
Data to be collected	*Method of collection and who is responsible*	*Planned data analysis*
Pre and post intervention survey data.	Likert scale survey – collected by author	Wilcoxon signed-rank test Spearman's rho

SMART GOAL #3: Increased clinical support of SANE nurses.		
- Provide protocol. - Provide protocol education. - Complete first 2 goals		
Data to be collected	*Method of collection and who is responsible*	*Planned data analysis*
Subjective reports pre and post intervention	Likert scale survey – collected by author	Wilcoxon signed-rank test Spearman's rho

SMART GOAL #4: Improved quality of care given to sane patients		
- Improved SANE knowledge of exam expectations through use of protocol. - Improved SANE confidence during exam through use of protocol		
Data to be collected	*Method of collection and who is responsible*	*Planned data analysis*
Subjective reports pre and post intervention	Likert scale survey – collected by author	Wilcoxon signed-rank test Spearman's rho

SMART GOAL #5: Improved quality of evidence collected		
- Provide clinical support through use of protocol on when/how to collect evidence through use of protocol. - Improved SANE knowledge of types of evidence to be collected and when through use of protocol.		
Data to be collected	*Method of collection and who is responsible*	*Planned data analysis*
Subjective reports pre and post intervention	Likert scale survey – collected by the author	Wilcoxon signed-rank test Spearman's rho

Table 1. Smart Goals.

Safety and Confidentiality

Surveys and questionnaires will be delivered anonymously and online via SurveyMonkey. No known safety risk is present for either nurses or patients during this QI project. The medical director of the SANE program granted permission to complete this QI project. SANE nurse consent will be implied by self-selecting to fill out the anonymous survey. A statement of this implied consent is included in survey instructions (appendix C).

Data collection will include questions assessing nurse perception of role clarity and expectations; sense of clinical support; and knowledge of protocol use in the SANE exam from an online survey distributed via email or text to all current and training SANE nurses. Data collection will be primary, collected by this author, and includes no protected health information. Demographic data has the risk of being identifiable given the small potential sample size. Instructions included in the survey describe rationale for data collection, anonymity, and allow participants to opt out of this section without comprising use of their other responses. No known security risk is involved in data collection for this QI project. Given the nature of data collection, no patient data will be used or removed from the facility and will not require destruction. No data transport is required as it will all be collected online. All responses will be stored only in the author's password protected SurveyMonkey account. No other individuals have access to the password or account.

CHAPTER THREE

QUALITY IMPROVEMENT MANUSCRIPT

Contribution of Authors and Co-Authors

Manuscript in Chapter 3

Author: Libby McKinney BSN, RN, DNP candidate

Contributions: Completed a needs survey with SANE nurses, identified the clinical problem, review of the literature, created a SANE exam protocol and flowchart, collected data, performed statistical analysis, interpretation, and discussion, and drafted the manuscript.

Co-Author: Dr. Carrie Miller PhD, RN, CHSE, CNE, IBCLC, FAAN

Contributions: Editorial review; support in developing the intervention and project implementation; content and formatting advisement; result interpretation assistance.

Co-Author: Dr. Jamie M. Nelson, PhD, MN, RN

Contributions: Editorial review.

Manuscript Information

Elizabeth A. McKinney BSN, RN, DNP candidate; Dr. Carrie W. Miller PhD, RN, CHSE, CNE, IBCLC, FAAN; Dr. Jamie M. Nelson, PhD, MN, RN

Journal of American Association of Nurse Practitioners

Status of Manuscript:
☒Prepared for submission to a peer-reviewed journal
☐ Officially submitted to a peer-reviewed journal
☐ Accepted by a peer-reviewed journal
☐ Published in a peer-reviewed journal

Abstract

Statement of Problem: Sexual assault is a common occurrence throughout the United States with significant side effects. Reporting shows that one in every six women, one out of thirty-three men, one in nine girls, and one in 20 boys are victims of sexual assault. These rates are greater among Native Americans, incarcerated individuals, military members, and those who identify as LGBTQ+IA. Side effects are many and may include physical, psychological, and financial repercussions. Research suggests sexual assault nurse examiners (SANEs) improve not only the judicial outcomes, but improve patient's sense of well-being, and reduce secondary traumatization. A needs survey administered to a SE Montana hospital SANE program indicated provider confusion when training to do the SANE exam due to a lack of standardization among how providers completed the exam.

Methods: A needs survey administered to a SE Montana hospital SANE program indicated provider confusion when training to do the SANE exam due to a lack of standardization. Using recommendations provided by the National SANE Protocol, a quality improvement plan was created to evaluate the implementation of an adult/adolescent exam protocol, and a flowchart based on the protocol.

Participants completed a pre-and post-survey to determine whether the protocol improved exam standardization, exam clarity, staff awareness of exam policy and procedures, quality of exam, confidence in practice, and clinical support of SANEs.

Results: Survey respondents were primarily novices and advanced beginners in the SANE role. Before the intervention, confidence was low, and respondents indicated challenges with clarity surrounding exam requirements and a poor sense of clinical support. Despite this, pre-survey respondents report collecting high-quality evidence and completing exams in line with policies and procedures. Following the intervention, all survey elements had increased rates of agree/strongly agree responses. This was true across the board, even with elements with high agreement in the pre-survey.

Conclusion: The availability of standardized clinical tools increases confidence, clarity, and support among SANE providers, which suggests the potential to improve the retention of SANEs and evidence quality.

Clinical Problem

Sexual assault may lead to both acute and chronic health concerns for victims. Acute injuries may include bruising, lacerations, human bites, unwanted pregnancy, sexually transmitted infections (STI), anxiety, depression, and suicidality (Centers for Disease Control, 2022). Chronically, unwanted sexual contact can lead to post-traumatic stress disorder, medical disease due to chronic stress, adverse lifestyle choices including smoking, alcohol, and drug use, and revictimization (Centers for Disease Control, 2022; Rape, Abuse, and Incest National Network, 2023). The cost of victimization averages $241,600 dollars over a lifetime due to medical or legal expenses, lost work, and disrupted education following an assault (National Sexual Violence Resource Center, n.d).

The issue of sexual violence remains prevalent in the United States (US), especially among certain groups. One out of every six women, one out of 33 men, one in nine girls, and one in 20 boys is a victim of sexual assault, including attempted or completed rape. Girls between ages 16 and 18 are at the highest risk, four times more likely to experience sexual assault than the general population. Those of Native American descent, LGBTQIA+, incarcerated individuals or a military member have higher rates of sexual violence. (Rape, Abuse, and Incest National Network, 2023). In the state of Montana, 121.9 out of 100,000 residents reported a sexual assault in 2019. This rate was six times higher for children (Martin, 2019).

The presence of SANE providers increases DNA collections, criminal charges, convictions, and sentence length (Barron et al., 2023; Sheeran et al., 2022). Additionally, SANE providers decrease secondary victimization by healthcare and law enforcement officials; and researchers suggest victims feel greater comfort, control, and belief when treated by a trained

SANE nurse (Patterson et al., 2022; Patterson et al., 2020; Sheeran et al., 2022). The inconsistent training of these specialized providers has left room for significant variations in exam procedures. The rural nature of many SANE programs contributes to this inconsistency, as hands-on practice, access to preceptors, and ongoing clinical support may prove difficult (Sheeran et al., 2022).

Review of the Literature

SANE nurses have existed since the late 1970s in response to nurse and patient acknowledgment of gaps in care (Office for Victims of Crime, nd). Little progression in the role occurred until 1990 with the publication of Lynch's (1990) "The Integrated Practice Model for Forensic Nursing." Lynch (1990) facilitated awareness and acknowledgment of the nursing specialty by the American Association of Forensic Science in 1991. Furthermore, Lynch's work led to the creation of the International Association of Forensic Nurses (IAFN) in 1992 (Valentine et al., 2020). The American Nurses Association officially recognized SANE nursing as a specialty in 1995. In 1997, the Office for Victims of Crime created the SANE Development and Operation Guide after a review of research (Office for Victims of Crime, nd).

Further role progression occurred via Slaughter (1992), advocating for nurses' ability to perform the SANE exam, establishing one of the first sexual assault response teams, and improving understanding and assessment of genital injury with the use of colposcopy. (Morse, 2019). This work is still being pioneered today with multiple gaps in research and widespread variation of program operations. Improved education on the topic and maintenance of existing programs remains a high priority (Sheeran et al., 2022).

SANE providers identified a need for more training as one barrier to providing high-quality care, leading to missed opportunities for evidence collection (Barron et al., 2023; Wolf et al., 2021). As of 2021, only seven states require continuing education in the care of victims of violence, and only Texas specifies this as care during forensic evidence collection. The other six states are Florida, Illinois, Kentucky, Iowa, Pennsylvania, and New York. There are no requirements for certification renewal, and no literature suggests the recommended frequency of retraining for competency maintenance (Wolf et al., 2021; Sheeran et al., 2022; AAACEUS, 2021). Despite urging in 1999 by the American Association of Colleges of Nursing to include forensic nursing in their curriculum, to this day, nursing programs have not, or only minimally, contributed to SANE training, with 83% of practicing SANE nurses reporting that their college courses did not teach forensic nursing (Torregosa et al., 2023; Sheeran et al., 2022). This educational gap perpetuates the shortage of SANE nurses and disregards survivor reports that improved training on trauma-informed care and interdisciplinary communication would have improved their experiences (Nathan & Ferrara, 2020; Gagnon et al., 2018).

One-third of nurses feel unprepared to practice as a SANE after completing training and feel additional hands-on practice would be beneficial (Sheeran et al., 2022). While nurses feel confident six months following their training, their confidence decreases over time, with increasing negative attitudes about the work. Specifically, SANEs need more confidence in the detailed documentation required for these exams (Bouchard et al., 2022; Torregosa et al., 2023).

Evidence suggests that written protocols and procedures improve exam thoroughness, documentation, referrals, adequate treatment for STIs, and pregnancy prevention. However, nurses revealed a lack of knowledge surrounding existing protocols (Barron et al., 2023).

Standardized education and practice are needed to prevent revictimization caused by an unskilled exam (Nathan & Ferrara, 2020). While there is a national protocol for sexual assault examinations, only about one-third of SANEs perceive this as being implemented in their area and 44% of SANE nurse are not sure if a written protocol exists in their organization. (Langness et al., 2022; Sheeran et al., 2022; Torregosa et al. 2023).

SANE nurses report a lack of clinical and organizational support as a risk factor for burnout related to vicarious trauma causing emotional and physical exhaustion (Bouchard et al., 2022; Terregosa et al., 2023). High burnout contributes to the national chronic shortage of SANEs, further stressing already unsupported and burned-out nurses (Sheeran et al., 2022). Social support, administrative support, and clinical supervision reduce the symptoms of compassion fatigue and burnout (Terregosa et al., 2023). These support gaps manifest in poor SANE retention rates of only 8% of SANEs practicing two years after training completion (Bouchard et al., 2022). When adequately supported in these ways, SANEs have higher confidence levels and can continue doing this challenging work. This knowledge holds important implications for interventions to improve employee retention and the availability of this specialized care (Torregosa et al., 2023; Bouchard et al., 2022).

Evidence from the 1990s until today suggests that SANE nurses improve the care of sexually assaulted patients, and the number of trained SANE nurses has expanded. Despite these facts, the role has struggled to gain traction in healthcare institutions and educational bodies throughout the last three decades. Poor traction has led to gaps in education and practice.

The lack of requirements for SANE continuing education, certification renewal, or college courses contributes to these gaps. Educational gaps can leave SANEs feeling insecure and

uncertain in their role, leading to frustration and burnout. Especially with insufficient education, written protocols improve confidence and competence in practice. Unfortunately, the existence and knowledge of written protocols among SANE programs are limited. When adequate organizational and clinical support exists, SANE nurse confidence and protocol use are improved. Less than half of SANE nurses know either their hospital or national SANE protocols. Even when protocols exist and nurses are aware of them, they still often struggle to implement them, lacking support from the organization.

Conceptual Framework

The IOWA model for practice change was utilized to implement the project. The fifth step, designing and piloting the practice change, includes developing a localized protocol, engaging participants, creating an evaluation and implementation plan, preparing the nurses, promoting adoption, and collecting and reporting post-pilot data (Iowa Model Collaborative, 2017). During this QI project, an exam protocol was created. Nurses were engaged by providing them with the background and evidence supporting the protocol. Weekly feedback from participants promoted the adoption of the protocol, and baseline and post-implementation data were collected with a survey and reported via statistical analysis.

Aims/Purpose

The purpose of this quality improvement initiative is to implement a SANE exam protocol in a Southeast (SE) Montana hospital SANE program. Primary goals include increased exam standardization, clear expectations of care, and increasing clinical support of SANE nurses. Secondary goals include improved patient care and quality of evidence. Goals outside the

timeline of this project include streamlined, standard training of new employees, nurse retention greater than two years, increased used of DNA in prosecution, and improved conviction rates.

Methods

Context

The protocol implementation takes place at a non-profit hospital in SE Montana. Eighteen SANE RNs, including those in training, comprise this hospital's SANE program. RNs in this SE Montana program have at least two years of nursing practice before beginning training. Anecdotal information gathered from staff members of this hospital's SANE program indicates the average length of practice as a SANE nurse in this program is two years, consistent with national data (Bouchard et al., 2022).

The program exists within the hospital's emergency department (ED), and nurses work on call, only coming in when needed. Call hours vary, with some RNs only picking up a few times a year and most working four 12-hour shifts monthly. RNs work primarily alone with the patient until exam completion. When pediatric cases come in, the exam, including genital exam and evidence collection, is completed by the SANE nurse. Emergency Department physicians must briefly examine all pediatric cases but do not complete any invasive exams unless requested by the SANE nurse. Physicians only see adult SANE patients if requested by the SANE RN. A medical doctor (MD) of emergency medicine oversees the program by reviewing cases and creating the standing order sets utilized by RNs during their exams. This MD is not involved in the exams. Victim advocates have also intermittently been present at the exam throughout the program's history. Advocate retention in this SE Montana town is poor. This SANE program primarily sees adult women of various ages, most commonly younger than 25. The program also

sees male and female pediatric patients and adult males, although less frequently. Most patients are Caucasian or Native American.

Intervention/Practice Change

The SANE protocol implemented during this project was created by utilizing the structure and evidence of the National SANE Protocol and the authors' knowledge of this hospital's program. See Appendix D for the full protocol.

Three days of education were completed via Microsoft Teams prior to protocol implementation. For those unable to attend a live session, a recording of the presentation was sent to all members of the SANE program. Sessions included evidence and background of the protocol, as well as the implementation and evaluation plan. Questions and feedback from attendees were encouraged.

Measures

Feedback collection continued throughout the data-gathering period through weekly feedback forms distributed via Google Docs. The forms aimed to determine whether the protocol affected how nurses completed their exams and if any components were confusing or needed adjustment. Data collection occurred for six weeks.

To assess how the practice change affected nurse confidence, exam quality, and perception of policies or protocols available for use, an online and anonymous pre- and post-intervention survey was distributed via Google Docs and was open for one week each time. See Appendix C for the survey. The initial five survey questions were adapted from Likert scale questions from the Kamalasanan et al. (2020) survey to evaluate healthcare employees' perception of quality. Questions 6 through 13 were created by this author as no validated tool to

measure SANE nurse experience and practice was found during the literature review (see Appendix C). The survey collects optionally provided demographic data to determine its effect on outcomes and potential for generalizability. All data from surveys and feedback forms was de-identified.

Analysis

Given the small number of participants, there was insufficient power to calculate a p-value that would provide meaningful data. Results of the pre-and post-survey are descriptive and reported via frequency tables. Variables included demographic data such as gender, ethnicity, age, and years of experience. Each answer from the pre-and post-surveys is reported as frequency, with an additional report detailing the percent of increased agree/strongly agree on responses following the intervention.

Results

Thirteen participants responded to the pre-survey, which formed the sample for this project. The demographic data of the sample are described in Table 2. On the post-survey, seven of the original thirteen submitted responses.

Demographics

Variable	*n*	%
ETHNICITY		
White	13	100.00
AGE		
18-24 years	1	7.69
25-34 years	5	38.46
35-44 years	4	30.77
45-54 years	2	15.38
55-64 years	1	7.69
Missing	0	0.00
Years of Nursing Experience		
0-5 years	6	46.15
5-10 years	2	15.38
10-15 years	3	23.08
15-20 years	2	15.38
Missing	0	0.00
GENDER		
Female	13	100.00
Missing	0	0.00
Years of SANE Nursing Experience		
Training	6	46.15
0-5 years	4	30.77
5-10 years	3	23.08
Missing	0	0.00

Table 2. Demographic details of the sample.

On the pre-survey, twelve of the thirteen respondents completed the full survey, with one respondent partially completing. In the post-survey, six participants completed the entire survey, with one respondent partially completing it. Tables 3, 4, 5 and 6 describe the results of the pre- and post-survey.

	Strongly agree/somewhat agree (4 or 5)		
	Pre-Intervention **12 total respondents** **1 partial respondent**	**Post-Intervention** **6 total respondents** **1 partial respondent**	
My SANE Program has a well-defined operational plan for controlling clinical and non-clinical processes in an efficient manner	N=6 (46.2%)	N=6 (86%)	Agree or strongly agree increased by 39.8%
I am provided with a job description explaining my roles, responsibilities, and tasks.	N=9 (69.3%)	N=7 (100%)	Agree or strongly agree increased by 30.7%
I am aware that there exist updated policies/guidelines for clinical procedures	N=10 (76.9%)	N=7 (100%)	Agree or strongly agree increased by 23.1%
All patient care and forensic activities are carried out as per protocols included in the policies and procedures manual	N=10 (83.3%)	N=7 (100%)	Agree or strongly agree increased by 16.7%
I am aware of my responsibilities to execute the defined policies and procedures in the care of SANE patients	N=10 (76.9%)	N=7 (100%)	Agree or strongly agree increased by 23.1
I feel supported clinically to complete my duties as a SANE	N=7 (53.9%)	N=7 (100%)	Agree or strongly agree increased by 46.1%
I feel confident when completing a SANE exam	N=3 (25%)	N=6 (86%)	Agree or strongly agree increased by 61%
I feel clarity surrounding SANE exam requirements	N=5 (38.5%)	N=6 (86%)	Agree or strongly agree increased by 47.5%
I feel clarity surrounding SANE exam expectations	N=8 (61.6%)	N=6 (86%)	Agree or strongly agree increased by 24.4%
I feel confident knowing when to utilize specific exam techniques during a SANE exam	N=3 (25%)	N=5 (71%)	Agree or strongly agree increased by 46%
I feel confident knowing when to order specific tests during a SANE exam	N=5 (41.7%)	N=5 (71%)	Agree or strongly agree increased by 29.3%
I feel confident knowing what evidence to collect during a SANE exam	N=6 (50%)	N=5 (71%)	Agree or strongly agree increased by 21%
I collect high-quality forensic evidence	N=7 (58.3%)	N=6 (86%)	Agree or strongly agree increased by 27.7

Table 3. Pre- and Post- Levels of Agreement Table.

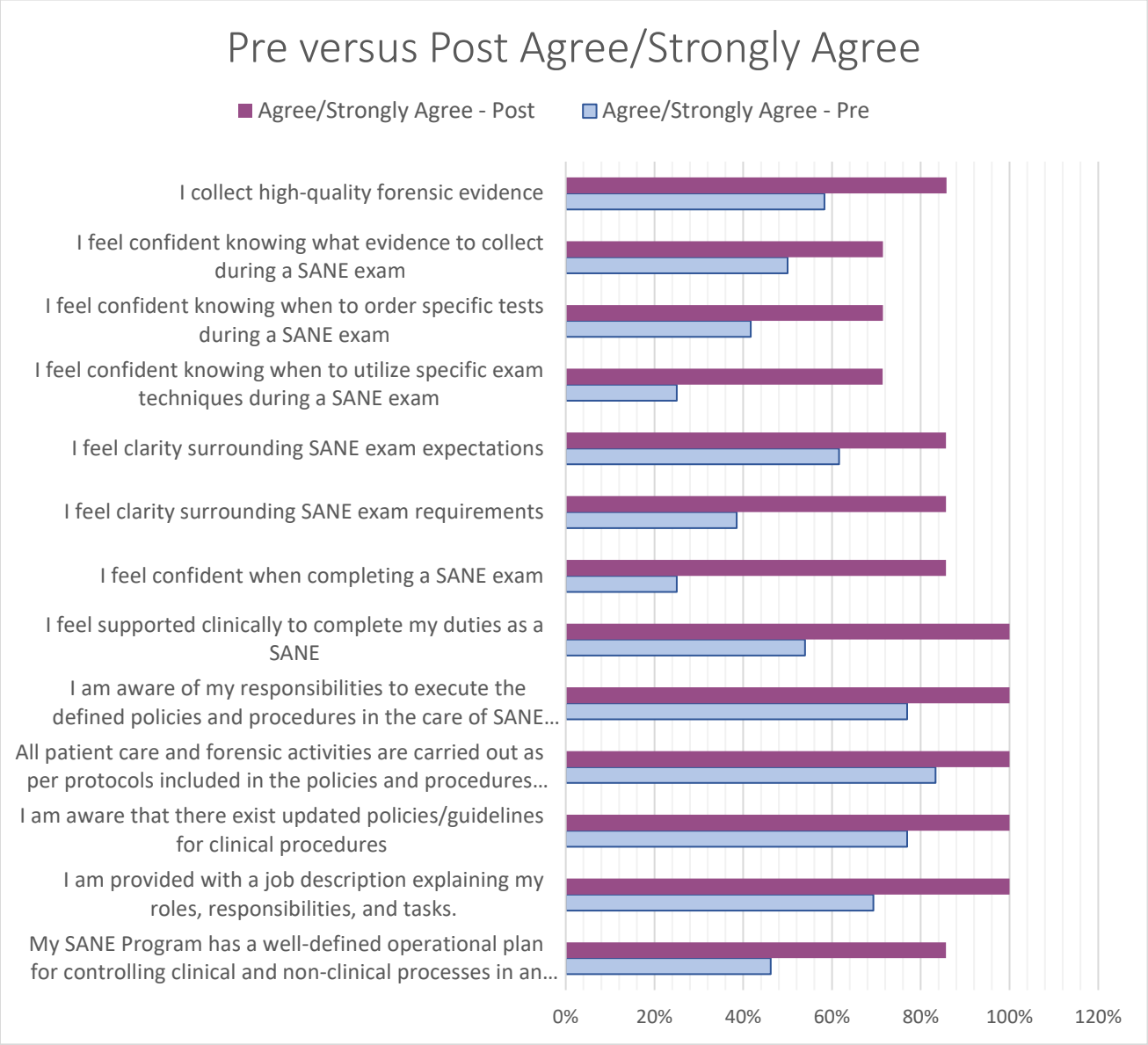


Table 4. Change in Agreement Following Intervention Chart.

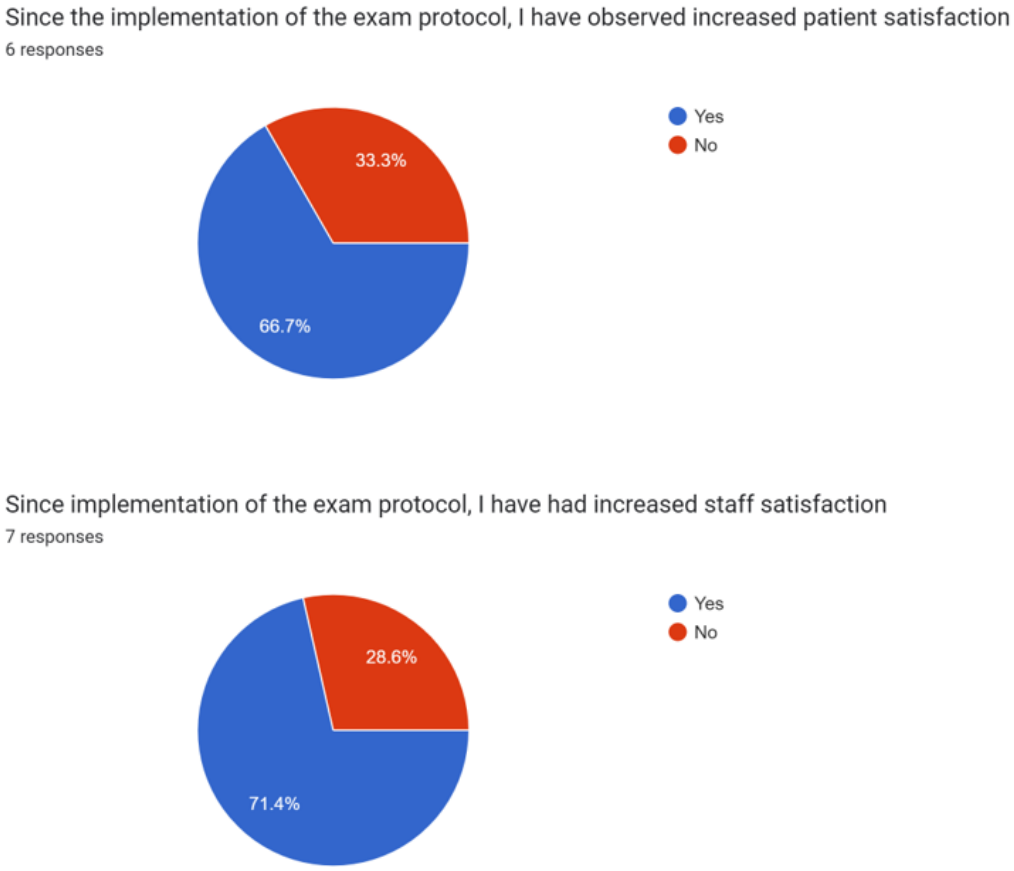


Table 5. Change in patient and staff satisfaction.

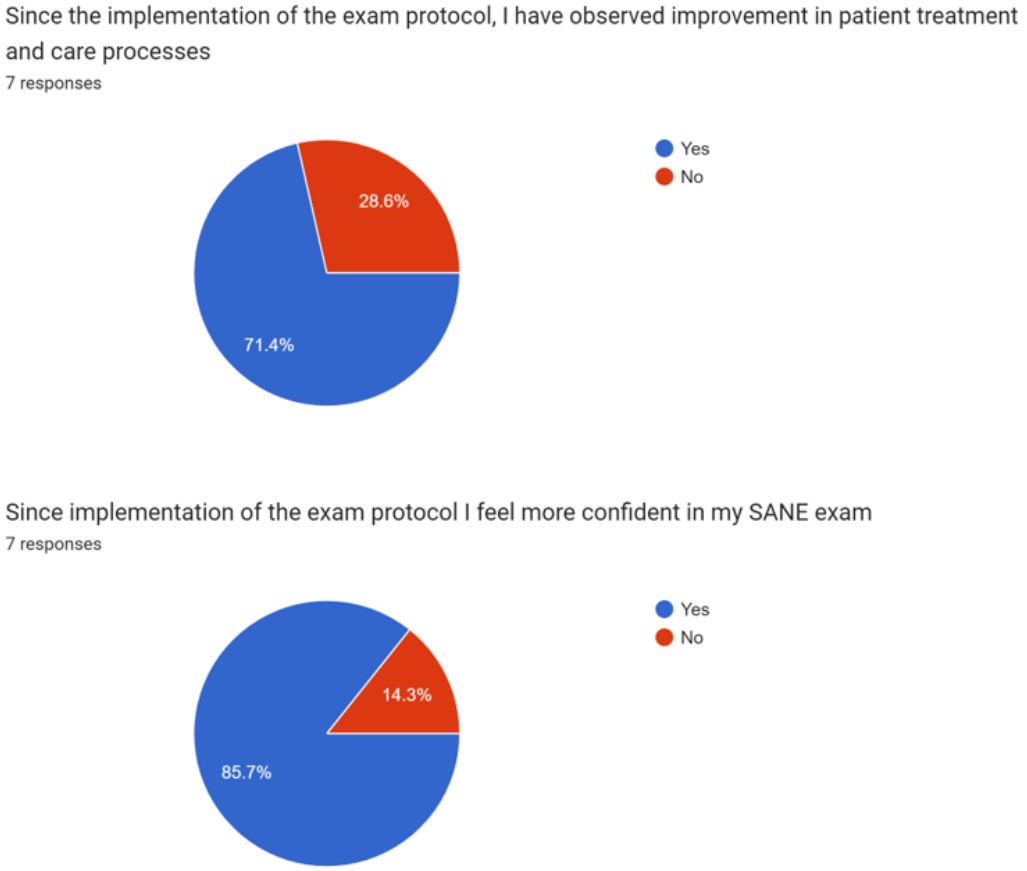


Table 6. Change in quality of care and SANE nurse confidence.

Discussion

Through comparison of the pre-and post-survey data as well as the respondent feedback statements, it is evident that the quality improvement project met all its primary and secondary goals, including increased exam standardization, clear expectations of care, increased clinical support of SANE nurses, improved patient care, and improved quality of evidence.

Participant statements in feedback imply the flowchart and protocol provided improved clinical support and assistance with standardizing exams. Remarks include:
“I think it’s a great breakdown. Wish I had this when I was in training and it will be good if questions arise,” “easy access if needed and resource available at the bedside in exam room,” “it has allowed me to keep my exam on track, even with interruptions and changes to my “normal” processes,” “it allowed me to better keep track of my exam flow. We had multiple interruptions during exams, and it helped keep us on track,” “More standardized approach,” “I am orienting, and I think it is really helpful in directing the exam!”

Some other users were able to verify they had been completing the exam in a structured way and were not missing any steps. They stated, “The protocol is pretty close to what I’ve always done, so I do feel it’s a great resource and shows we are following protocol appropriately.” And “It’s been great to know I have been following protocol appropriately.” Feedback also indicated that participants would like a similar tool for pediatric exams, stating, “I would love a ped-specific chart like this!” and “A separate pediatric one would be so awesome!”

Only some members of the SANE team were able to see a patient within the six weeks of data collection, which potentially affected the results as there may be unknown characteristics about those who saw a patient, affecting their responses to the survey. Additionally, those more likely to see patients had already completed orientation and were more likely to agree highly with survey variables. Since this data was de-identified, there is no way to tell whether post-survey responses were completed by more experienced SANE nurses or less.

Forty-six percent of respondents are within the first five years of their nursing career with 77% percent within the first five years of their SANE practice. The intervention greatly increased

overall confidence when completing exams (61%), confidence in choosing exam techniques (46%), clarity surround exam requirements (47.5%), and sense of clinical support (46.1%). This could indicate this intervention as highly valuable for novice or advanced beginner SANE nurses.

Benner's (1982) theory of novice to expert nursing model describes novice nurses as students with theoretical and limited clinical knowledge. They rely on mentors to build critical thinking skills and learn about culture and expectations. They approach clinical situations theoretically rather than relying on clinical judgment (Ozdemir, 2017). Advanced beginners have slightly more experience but cannot yet utilize past cases to view the global outlook of the patient situation. They tend to focus on only one part of patient care. They may still struggle to make independent decisions and may have increased anxiety when replanning care. Advanced beginner nurses continue to rely on more experienced nurses for counsel (Ozdemir, 2017). The results in the previous paragraph suggest that the project intervention combats the anxiety over decision-making and difficulty viewing the comprehensive situation often experienced by nurses early in their careers. The intervention offers structured support to the novice and advanced beginner nurses, acting as the mentor where a mentor is not commonly available and ensuring comprehensive care as the novice or advanced beginner SANE nurse focuses on the individual portions of care versus the whole picture.

All survey respondents have been in the SANE profession for no more than ten years, with nearly half (46%) currently in training. These findings are consistent with data discussed in the literature review, indicating that a SANE nurse's average career length is two years. The literature review suggests that the high national attrition rate for SANE nurses is affected by poor

confidence, which decreases over time and worsens attitudes about their work. Additionally, the literature reports that SANE nurses indicate a lack of clinical and organizational support as a factor leading to higher rates of stress and burnout. With SANE nurses feeling more confident and more significant support after utilizing the clinical tool in this intervention, this site may see an increase in SANE retention.

In the pre-intervention survey, 77% of respondents indicate they are aware of updated policies and procedures within their organization, 83% indicate that all patient care and forensic activities occur per protocols in the policies and procedure manual, and 77% report they are aware of their responsibilities to execute defined policies and procedures in the care of SANE patients. These findings are inconsistent with the literature results, which found that only 44% percent of nurses are aware of a SANE exam protocol in their organization, and only 33.3% are aware of the National SANE protocol. During the education sessions before protocol implementation, no attendees indicated familiarity with the National SANE protocol, which was consistent with findings from the literature. Pre-survey distribution occurred before these education sessions, so it is unclear if the respondents looked only at hospital policies and procedures versus national guidelines. It also raises concerns about guidelines used during training. All nurses in this program have completed didactic training with the International Association of Forensic Nursing. Some sections contain updated resources upon this author's review of the IAFN course. However, none of these hospitals' nurses knew the National Protocol. There is a disconnect between the training nurses receive and the use of the standardized protocol. There is also a disconnect between what the SANE nurses perceive and what appears to be the actuality. The hospital's policies and procedures do not include the National Protocol,

which may contribute to poor standardization and understanding of exam components noted in the pre-survey data. Given this information, it is not surprising that most respondents believe they are aware of their responsibilities to execute defined policies and procedures in the care of SANE patients because they believe they have complete information regarding SANE care protocol. These results may show the lack of retraining requirements discussed in the literature review. More practicing SANE nurses would be aware of updated protocols if required to update training and lessen this disconnect.

Interestingly, the clarity surrounding exam requirements was low, but clarity surrounding exam expectations was high on the pre-survey. It becomes more evident by looking at the Oxford language definitions (2024). Expectation is the belief that something will happen or be achieved. Requirement is something that is needed or necessary. These definitions display that while SANE nurses believe they have what they need to complete a high-quality SANE exam, they need more clarity on the steps needed to achieve this. This intervention connected their belief in completing the exam and their understanding of how to do it, with 86% of respondents agreeing with both these statements in the post-survey and a 47.5% increase in clarity regarding requirements.

Despite low confidence in utilizing exam techniques, clarity around exam requirements, and overall poor confidence when completing exams on the pre-survey, 53% of respondents indicated they collect high-quality forensic evidence. These findings may point to poor self-efficacy. Bandura (1977) defined self-efficacy as an individual's belief that they can execute needed behaviors to reach the desired outcome. Despite believing they are achieving the desired outcome of high-quality evidence collection, their low confidence and clarity indicate they do

not know how to execute the needed behaviors. The sources of self-efficacy include performance accomplishments, vicarious experience, verbal persuasion, and physiological states (Bandura, 1977). This project's findings make sense when considering that most respondents are in the novice or advanced beginner stage of learning and do not have the needed accomplishment or experience to reach self-efficacy. This intervention provides the structured support essential to performing the behaviors required to meet the desired outcome, allowing mature self-efficacy, success in this role, and the ability to complete a high-quality standardized SANE exam.

While the intervention positively affected every variable assessed in the survey, including staff satisfaction, patient satisfaction, quality of care, knowledge, and understanding of protocols, several factors may have skewed this data. Since there was a large attrition rate, those who responded to the post-survey may have been the individuals who already had a high agreement with survey questions, giving a false positive to results known as attrition bias. Since the survey utilized a Likert agreement scale, it was at high risk for acquiescence bias, or the tendency for participants to agree more often than disagree when faced with these options.

Limitations

Generalizability is quite limited based on the demographics of the population. All members were Caucasian females with less than ten years of SANE nursing experience; half had five or fewer years of overall nursing experience. This quality improvement study occurred in a Montana hospital, which may limit generalizability to facilities in less rural areas. With this small sample size, power analysis was inappropriate and may offer further insights into the findings. Data collection occurred for only six weeks. There may have been different results if SANE providers had time to complete additional exams utilizing the standardized protocol and

flowchart. We would also have gathered nurse attrition rates to determine that this intervention will lessen attrition as we hypothesize. There was only a small amount of previous research on this topic, with no previous studies assessing the use of an exam protocol and flowchart to standardize exams. Should more previous data have been available, the intervention may have been more successful by building on the work of others to determine what is helpful and what should be measured. The presentation of SANE patients varies considerably, and not all nurses had the opportunity to utilize the SANE protocol and flowchart; this limits the amount of data that could be collected and decreases survey responses. Eight of the survey questions are invalidated; because of this, there are limitations to what we can glean from the results. Survey questions should be validated to prove the accuracy and reliability of outcomes.

Recommendations

Based on the findings in this quality improvement project, recommending a standardized SANE exam protocol and bedside flowchart to improve SANE nurse confidence and support is prudent and warranted. However, I recommend further studies or projects in other demographics and locations. To confirm the results of this project, repeat testing with a larger sample size is recommended, allowing for a more robust statistical evaluation with power calculation. Similarly, a longer data collection period, preferably over some years, would allow for evaluating SANE nurse retention, changes to judicial outcomes, and further discussion of the effect on SANE nurse confidence and sense of self-efficacy. We recommend a mixed method, longitudinal, quasi-experimental study. Finally, pursuing validation of the eight survey questions this author created to test for reliability and viability.

Given that the findings indicate improvement in confidence, clarity, and support among novice to advanced beginner SANE nurses, I recommend using a standardized SANE exam protocol and bedside flowchart in program orientations. However, more than this project is needed to recommend this intervention as an evidence-based practice, although initial results do show improvement in the project's aims and goals.

Conclusions

This project's results show promise that implementing a standardized SANE exam protocol and flowchart can increase SANE nurse confidence, clarity, and support. With these factors improving, I suspect it will improve nurse retention for more than two years and the collection of higher-quality evidence. The intervention met the goals set at the start, including increased exam standardization, clear expectations of care, increased clinical support of SANE nurses, improved patient care, and improved quality of evidence.

These results may significantly affect how we train and support SANE nurses in the future. The previous literature and findings of this project indicate gaps in knowledge and the translation of knowledge to practice. If these results can be repeated, utilizing a bedside protocol and flowchart may improve standardization nationwide and advance the quality of services available for assault survivors.

CHAPTER FOUR

ADVANCED NURSING ESSENTIALS REFLECTION

Knowledge for Nursing Practice

Through my DNP and APRN education, I discovered how my undergraduate studies and ten years of nursing experience will make me a better clinician by building on the information and knowledge I already have. When studying pathophysiology, completing clinical assessments, and working up differentials, I often found myself relating it to a past patient I cared for as an RN. Remembering how this information looks on an actual patient helped cement these concepts in my mind, and the rationale behind orders I've carried out many times began clicking. I've realized I already have much of the knowledge I need to be successful as an advanced practitioner; it just requires some reconfiguration of goals and reprioritization of tasks to take my clinical reasoning from an RN-centered approach to a DNP-centered approach.

Person-Centered Care

Person-centered care is something I have strived for in my career for many years. Learning the patience needed to slow down and focus on the person before me instead of my to-do list took time. To exemplify this, in my RN career, I will occasionally get bedside reports that a patient is difficult, agitated, or unkind. However, when I provide respectful, empathetic, and individualized care, setting aside my impatience and frustration of the day, I find I have no difficulties with them. The nursing model focuses on person-centered care, which I am grateful for going forward as a practitioner. I know my DNP education and my nursing experiences will help me continue to focus on the patient's priorities and build a therapeutic relationship.

Several assignments throughout my academic career expanded my capacity for empathy and understanding by consuming media concerning underserved populations and the care of older adults. My passion for promoting a safe and comfortable environment with therapeutic communication will improve my patients' health outcomes as we build trust and they feel comfortable sharing symptoms or concerns that may feel shameful to them.

Population Health

Assessing healthcare systems, or even noticing healthcare systems, was something new to me during this program. I now notice them frequently during work and clinicals and consider how these systems affect patient care. While I was uncertain about how my project would influence population health, I have been encouraged by its implementation. My project aims to improve the efficacy of care for a small sub-population within a microsystem. This required me to learn how to properly assess how the microsystem was currently functioning and where there may be a system breakdown. I am excited to take this knowledge into the workforce and continue improving population health through assessing and improving healthcare systems.

Scholarship for Nursing Practice

Much of my academic career was focused on my scholarship in nursing practice. In the early semesters, we spent a lot of time learning how to read and evaluate research, build a research or quality improvement study, and consider how health inequities affect the interpretation of research through N604, N605, N614, and N611. This has been meaningful in my education as a DNP and in my work as an RN. I have always been passionate about working with underserved populations, but understanding that our evidence base often underrepresents

women, LGBTQ+, and people of color motivates me to pursue further research focusing on these populations. I am grateful to have been able to concentrate my quality improvement project on enhancing the care of an underserved population, and I hope to have opportunities to complete further quality improvement during my career.

Quality and Safety

Quality and safety failure results most often from a system failure, not a personal one. N608 provided an in-depth look at assessing systems and where they break down. I achieved this essential goal by completing a needs survey when planning my project. Through this survey, I discovered areas of the program that team members identified as not working well. I then created a nationally approved intervention aimed at addressing these breakdowns. From an APRN standpoint, I role model well-being and resiliency in my work and teaching settings. I prioritize educating my students and trainees that self-care must be prioritized during their workday, or they will quickly burn out, and patient care, thus safety, will deteriorate.

Interprofessional Partnerships

While no particular course during my graduate career focused specifically on interprofessional partnerships, this is a core standard of the nursing model that I have practiced since entering the nursing world and was a significant focus of my undergraduate work. Through my graduate experience, I have emerged as a leader in these partnerships. Through my DNP work, I have implemented an evidence-based procedure and flowchart to integrate evidence-based changes to our SANE team's workflow to improve patient outcomes and effectiveness while training. As an APRN, I model respect for diversity and inclusion during my

communications with team members as an RN. We are increasingly seeing more significant numbers of varied races, genders, and sexual orientations among employees and patients alike. I model respect by speaking up and correcting others when they use incorrect language or make racist and discriminatory assumptions about the health of patients or the work quality of peers. I also personally advocated the hospital CEO to publicly support the Black Lives Matter movement following the murder of George Floyd with the argument that we need all our community members to feel safe receiving healthcare at our institution and that this was a meaningful way to ensure marginalized patients felt safe.

Systems-Based Practice

During our health policy course, we had the opportunity to write and send a letter to our representatives advocating for a healthcare-related policy change. Unfortunately, I cannot find the letter I sent, but I did send it to two senators. In an APRN role, I learned from a preceptor about our responsibility to ensure healthcare remains affordable for the community and that we cannot think only about the consequences to a single patient. Each test we order drives the rising cost of healthcare, so we must be judicious and think critically to ensure we are ordering only what truly needs to be done to maintain cost-effective care.

Information and Healthcare Technologies

During my DNP coursework, I evaluated a consumer's internet use for health information and their perception of these sites' reliability. I then reviewed these sites and educated this patient on choosing reliable health information sites. Completing this project gave me the knowledge and experience to interpret data correctly and evaluate and improve my patient's health

information literacy. I have utilized this experience during my APRN rotations as I educate patients. These days, nearly all patients come to their appointments with a pre-google review of the symptoms completed. I now have more excellent knowledge to evaluate the sites they studied and steer them toward reliable and high-quality information.

Professionalism

I love the essential handbook's description that "nursing professionalism is a continuous process of socialization that requires the nurse to give back through mentorship and development of others." As an RN and in my APRN role, I hold myself to a high standard of pride in my work, which translates to zealous kindness and humility by constantly considering the humanity of those I work with as well as my own. An acknowledgment of humanity must start with the self to provide high-quality care. I believe I am successful at this as I have routinely, in my work as an RN, received positive feedback from patients regarding my quality of work, their comfort with me, and my therapeutic care. As a SANE, I have been grateful to have multiple patients tell me I made their exam a positive experience. I have had young girls who declined other caregivers in the room form a trusting bond with me during their exams. I have had family members of dying patients thank me for my professionalism. I feel passionate about giving back by offering my experience and what I have learned to the next generation of nurses. I do this through my teaching duties, my ability to form comfortable, professional relationships with new nurses, and agreeing to take on students in the workplace.

Personal, Professional, and Leadership Development

This program helped me grow my leadership skills in direct and indirect ways. I became a graduate teaching assistant to help pay for tuition and learned more about positive leadership than I ever would have expected. I was able to mentor and support student nurses through what is a difficult and stressful time of life. I was able to pass on my commitment to completing evidence-based tasks despite their inconvenience, and I encouraged and influenced students in their therapeutic interactions and abundant patience and kindness. I expanded my leadership skills through my scholarly project – working with peers and educating them on best practices despite the uncomfortable job of correcting certain ingrained practices. Through this quality improvement project and my advanced practice studies, members of this program will also look to me for leadership in the future.

REFERENCES CITED

Aaaceus Online Continuing Education for Healthcare Professionals. (2021, August 4). *Nursing continuing education requirements by state*. https://www.aaaceus.com/state_nursing_requirements.asp

American Psychological Association. (2022, October 31). *How stress affects your health.* https://www.apa.org/topics/stress/health#:~:text=This%20can%20put%20you%20at,and%20memory%20and%20concentration%20impairment.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review* (*84*) 2, 191-215. https://DOI:10.1037/0033-295X.84.2.191

Barron, R. J., Faynshtayn, N. G., Jessen, E., Girardin, A. L., Tovy, H. K., Schoenfeld, E. M., Hardy, E. J., Baird, J., Siero, A. A., & McGregor, A. J. (2023). Characteristics of acute sexual assault care in New England emergency departments. *Journal of the American College of Emergency Physicians Open, 4*(3)https://doi.org/10.1002/emp2.12955

Bouchard, L., Williams, D., Kiser, L., Freese, E., & Taren, D. (2022). Promoting professional quality of life and resiliency in sexual assault nurse examiners. *Journal of Forensic Nursing*, *18*(1), 13–20. https://doi.org/10.1097/JFN.0000000000000350

Centers for Disease Control and Prevention. (2022, June 22). *Fast facts, Preventing sexual violence*. https://www.cdc.gov/violenceprevention/sexualviolence/fastfact.html

Gagnon, K. L., Wright, N., Srinivas, T., & DePrince, A. P. (2018). Survivor' advice to service providers: how to best serve survivors of sexual assault. *Journal of Aggression, Maltreatment & Trauma*, *27*(10), 1125–1144. https://doi.org/10.1080/10926771.2018.1426069

International Association of Forensic Nurses (2023). *History of the association.* https://www.forensicnurses.org/page/AboutUS/

Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14*(3), 175-182. https://doi.org/10.1111/wvn.12223

Kamalasanan, A., Sathiyamurthi, G., Subbarayalu, A.V. (2020, May 25). A tool to assess the quality perception of healthcare employees. *International Journal of Health Care Quality Assurance*, (*33*) 4/5, 291-307. https://doi.org/10.1108/IJHCQA-01-2020-0008

Kim, M. & Mallory, C. (2017). *Statistics for evidence-based practice in nursing*. Jones and Bartlett Learning.

Langness, M., Zweig, J. M., Tiry, E., Henderson, E., Stahlmann, N., & Bastomski, S. (2022). Examining the implementation of the national protocol for sexual assault medical forensic examinations. *Journal of Forensic Nursing*, *18*(2), 67–77. https://doi.org/10.1097/JFN.0000000000000369

Lynch, V. A. (1990). *Clinical forensic nursing: A descriptive study in role development* (Order No. 1341080). Available from ProQuest One Academic. (194054084). https://www.proquest.com/dissertations-theses/clinical-forensic-nursing-descriptive-study-role/docview/194054084/se-2

Martin, K.H. (2019). Sexual assaults recorded by law enforcement, 2019. *Bureau of Justice Statistics*. https://bjs.ojp.gov/nibrs/reports/sarble/sarble19

Morse, J. (2019, February). Legal mobilization in medicine: Nurses, rape kits, and the emergence of forensic nursing in the United States since the 1970s. *Social Science and Medicine (222),* 323-334. https://doi.org/10.1016/j.socscimed.2018.12.032

Nathan, S., & Ferrara, M. (2020). An innovative trauma -informed curriculum for sexual assault Care. *The Journal of Nursing Education*, *59*(6), 336–340. https://doi.org/10.3928/01484834-20200520-07

National Institute of Justice. (2016, June 1). *Violence against American Indian and Alaska native women and men*. https://nij.ojp.gov/topics/articles/violence-against-american-indian-and-alaska-native-women-and-men

National Sexual Violence Resource Center. (n.d). *About sexual assault*. https://www.nsvrc.org/about-sexual-assault

Office for Victims of Crime. (N.d). *SANE program development and operation guide*. https://www.ovcttac.gov/saneguide/introduction/history-and-development-of-sane-programs/#:~:text=Nurses%20led%20the%20effort%20to,Amarillo%2C%20Texas%2C%20in%201979.&text=These%20nurses%20worked%20in%20isolation%20until%20the%20early%201990s.

Ozdemir, N.G. (2019). The development of nurses' individualized care perceptions and practices: Benner's novice to expert model perspective. *International Journal of Caring Sciences* (*12)* 2, 1279-1285. https://www.internationaljournalofcaringsciences.org/docs/81_ozdemir_special_12_2.pdf

Patterson, D., Pennefather, M., & Donoghue, K. (2020). Shifting sexual assault forensic examiners orientation from prosecutorial to patient-centered: The role of training. *Journal of Interpersonal Violence*, *35*(21-22), 4757–4778. https://doi.org/10.1177/0886260517717491

Patterson, D., & Resko, S. (2020). Factors associated with knowledge retention 3 months after a sexual assault forensic examiner blended learning course. *Journal of Forensic Nursing*, *16*(3), 138–145. https://doi.org/10.1097/JFN.0000000000000293

Rape, Abuse & Incest National Network. (n.d). *Rape Trauma Syndrome*. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.justice.gov/file/1121326/download

Rape, Abuse & Incest National Network. (2023). *Victims of sexual violence: Statistics*. https://www.rainn.org/statistics/victims-sexual-violence

Sheeran, B., Kiser, L., Williams-Gilbert, W., & Enslow, E. (2022). Sexual assault nurse examiner training: A review of literature and implication for nursing education and service to rural communities. *Journal of Forensic Nursing*, *18*(2), 78–84. https://doi.org/10.1097/JFN.0000000000000366

Torregosa, M.B., Patricio, O.M., Benavides, M.D. (2023, August 23). Sexual assault nurse examiner (SANE) program: Long-term impact on confidence and attitudes on SANE trainees. *Nurse Education in Practice*, *72*(2023), 103757.

United State Department of Justice Office of Crimes Against Women. (2013, April). *A national protocol for sexual assault medical forensic examinations. Adult/adolescent* (2nd ed). National SANE Protocol.pdf

UN Women. (2023, September 21). *Facts and figures: Ending violence against women.* https://www.unwomen.org/en/what-we-do/ending-violence-against-women/facts-and-figures#:~:text=Globally%2C%20an%20estimated%20736%20million,does%20not%20include%20sexual%20harassment

United States Census Bureau. (2021). *No title*. https://www.census.gov/programs-surveys/popest/tables/

Valentine, J. L., Sekula, K.L., Lynch, V. (2020). Evolution of forensic nursing theory – Introduction of the constructed theory of forensic nursing care: A middle-range theory. *Journal of Forensic Nursing* (*16*) 4, 188-198. 10.1097/JFN.0000000000000287

Valentine, J.L. (2014). Why we do what we do: A theoretical evaluation of the integrated practice model for forensic nursing science. Journal of Forensic Nursing (10) 3, 113-119. https://doi.org/10.1097/JFN.0000000000000041

Wolf, L. A., Perhats, C., & Delao, A. (2022). Educational needs of U.S. emergency nurses related to forensic nursing processes. *Journal of Trauma Nursing*, *29*(1), 12–20. https://doi.org/10.1097/JTN.0000000000000627

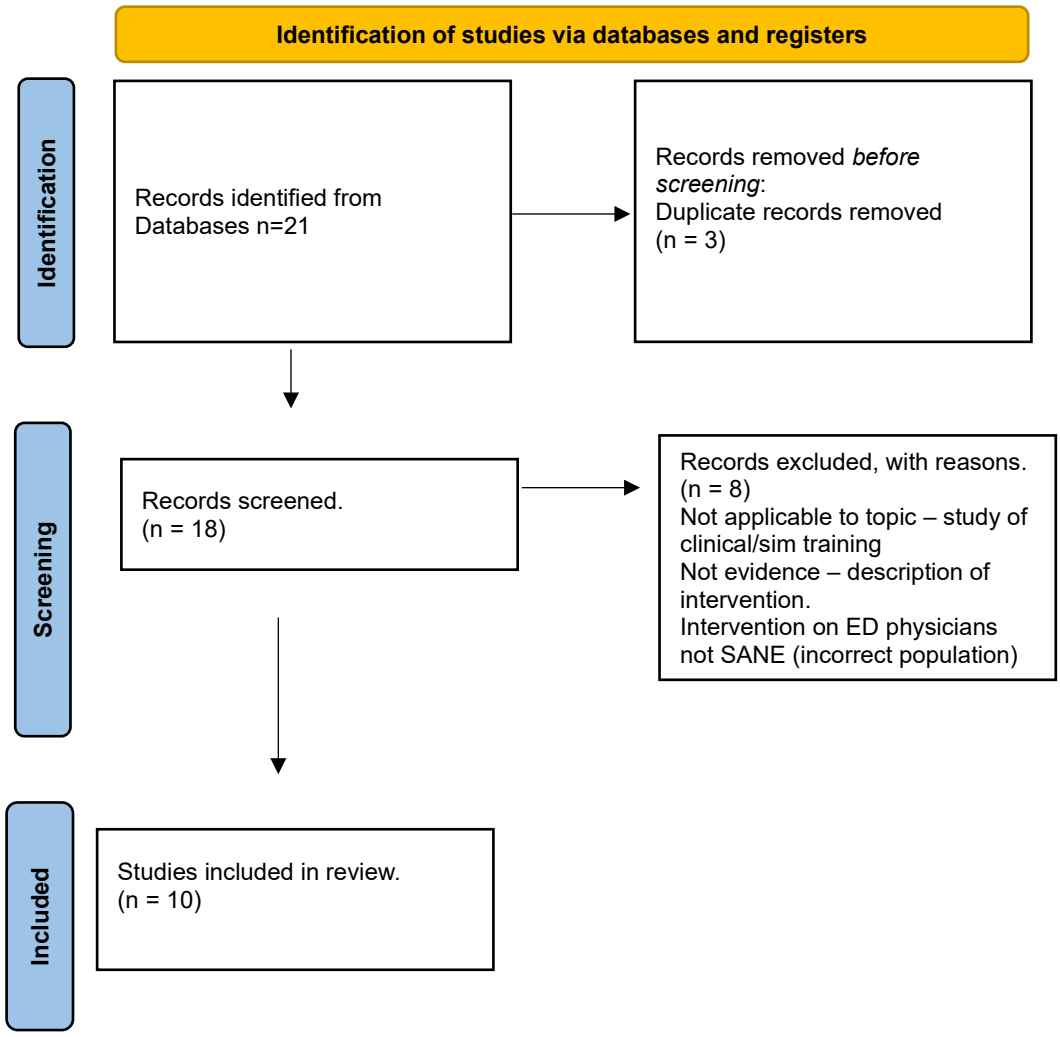
World Health Organization. (2009, June 5). *WHO multimodal improvement strategy*. https://www.who.int/publications/m/item/who-multimodal-improvement-strat

APPENDICES

APPENDIX A

PRISMA

Appendix A PRISMA



APPENDIX B

LOGIC MODEL

Appendix B Logic Model

Program: Provide standardized and easily accessible SANE exam process and procedure protocol.

Situation: Lack of clarity and standardization in training to complete SANE exams; nurse frustration; insufficient exams; decreased prosecution rates.

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES		
Staff: Willingness to participate in QI implementation and evaluation. Knowledge of "Teams page" navigation. *Resources:* Computer availability in office Binder for hard copy access *Technology:* Facility intranet access "Teams page" set up access. Document creation for hard copy	Create SANE exam protocol. • Utilizing National SANE protocol • Utilizing feedback of SANE staff Plan nursing staff protocol evaluation. • Schedule education day • Reason for protocol • How to utilize protocol • Expectations for feedback Plan implementation of protocol. • Choose start date. • Weekly follow-up with staff Plan evaluation of protocol use on SANE nurse experiences. • Pre and post survey adapted as discussed. • Weekly follow-up	Creation of: • Evidenced-based, easy-to-use protocol. Nurse education of: • Protocol goals • Evidence behind protocol • How to utilize protocol Implementation of: • Created protocol use. • Weekly feedback data gathering Evaluation of Improvements in: • Exam clarity • Training ease • Sense of support • Perception of exam quality	***Short*** ***By February 28th 2024*** Improved clarity on components of exam Provide framework for exam to improve standardization. Increase sense of support in SANEs by offering easy to access resource.	***Intermediate*** ***By end of DNP projects*** Improve quality of care given to sane patients Improve quality of evidence collection during sane exam	***Long*** **By January 2025** Streamlined, standard training of new employees. Nurse retention >2 years. Increased used of DNA is in prosecution. Improved conviction rates

APPENDIX C

USE OF SANE PROTOCOL SURVEY

Appendix C Use of SANE Protocol Survey

Use of SANE exam protocol

Instructions:

Demographic data is being collected to assess whether these factors affect the responses to the below survey. All data collection is anonymous and will not be shared. This is optional, and failure to complete this section will not affect the evaluation of your responses to the blow survey.

Age:

18-24 ☐

25-34 ☐

35-44 ☐

45-54 ☐

55-64 ☐

65 or over ☐

Gender:

Male ☐

Female ☐

Transgender ☐

Non-binary ☐

Ethnicity:

White ☐

Non-Hispanic Black ☐

Hispanic/Latino ☐

Native American/Alaska Native ☐

Asian/Pacific Islander ☐

Years of nursing experience:

0-5 ☐

5-10 ☐

10-15 ☐

15-20 ☐

20-25 ☐

25-30 ☐

30-35 ☐

35-40 ☐

Greater than 40 ☐

Years of SANE experience:

Training ☐

0-5 ☐

5-10 ☐

10-15 ☐

15-20 ☐

20-25 ☐

25-30 ☐

30-35 ☐

35-40 ☐

Greater than 40 ☐

Appendix C Use of SANE Protocol Survey Continued

Instructions:

By completing this survey, it implies your consent to have your responses included in the evaluation of this project. If you do not wish to have your answers used in this way, please do not return survey. Please rate the following statements on a scale of 1-5 with 1 indicating strongly disagree, 2 somewhat disagree, 3 neither agree or disagree, 4 somewhat agree, and 5 indicating strongly agree.

1. My program has a well-defined operational plan for controlling clinical and non-clinical processes in an efficient manner.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

2. I am provided with a job description explaining my roles, responsibilities, and tasks.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

3. I am aware that there exist updated policies/guidelines for clinical procedures.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

4. All patient care and forensic activities are carried out as per protocols mentioned in the policies and procedure manual.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

5. I am aware of my responsibilities to execute the defined policies and procedures for SANE patients.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

6. I feel supported clinically to complete my duties as a SANE.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

7. I feel confident when completing a SANE exam.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

8. I feel clarity surrounding SANE exam requirements.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Disappointing Exceptional

9. I feel clarity surround SANE exam expectations.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Disappointing Exceptional

10. I feel confident knowing when to utilize specific exam techniques during SANE exam.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

11. I feel confident knowing when to order specific lab tests during SANE exam.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

12. I feel confident knowing what evidence to collect during a SANE exam.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

13. I collect high-quality forensic evidence.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Strongly disagree Strongly agree

Instructions:

STOP. These questions should only be filled out in post-survey. If you are completing the post-survey, please check either yes or no to the following statements.

Since the implementation of the exam protocol, I have observed increased patient satisfaction ☐ Yes | ☐ No

Since the implementation of the exam protocol, I have had increased staff satisfaction ☐ Yes | ☐ No

Since the implementation of the exam protocol, I have observed improvement in patient treatment/care processes ☐ Yes | ☐ No

Since the implementation of the exam protocol, I feel more confident in my SANE exam ☐ Yes | ☐ No

APPENDIX D

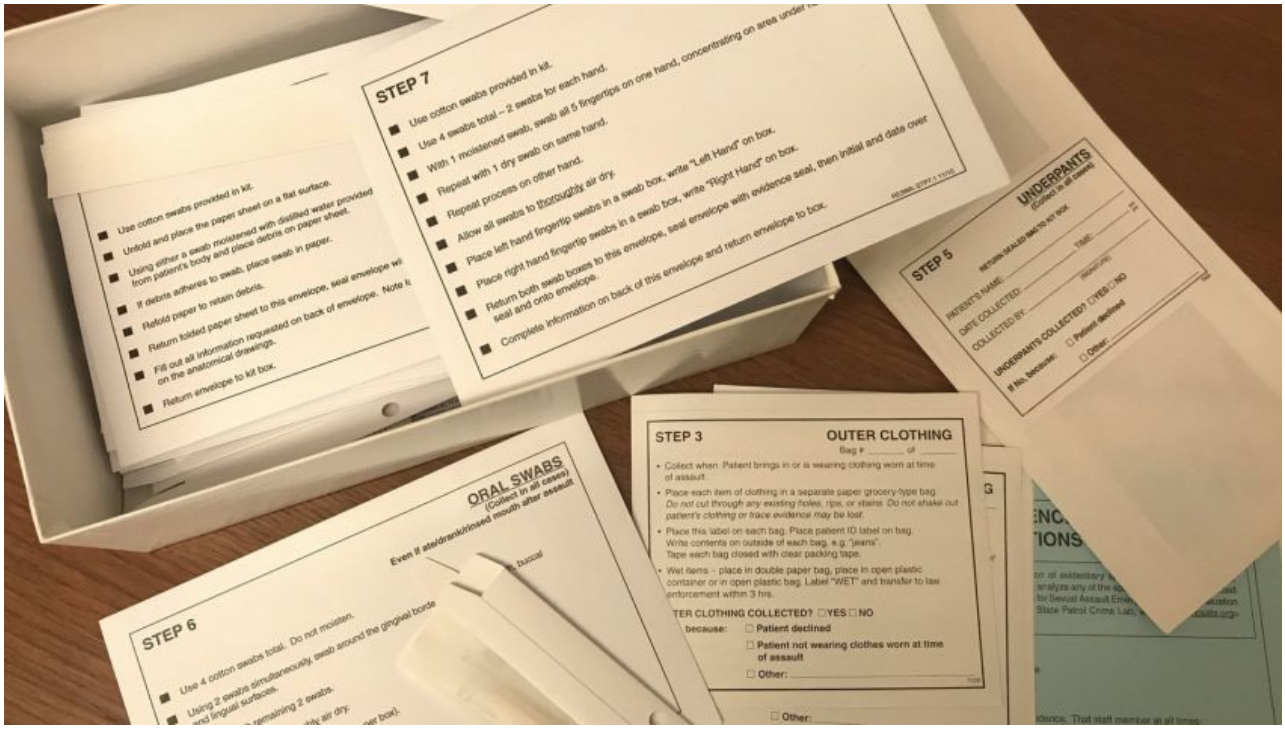
SANE EXAM PROTOCOL

Appendix D SANE Exam Protocol

ADULT/ADOLESCENT SANE EXAM

1/26/24

PROTOCOL



Gather Supplies

Ensure all supplies are ready prior to beginning the exam to minimize interruptions.

Supplies stored in C1 exam room closet:

- SANE kit includes swabs, comb, head and pubic hair tape, underwear bag, swab envelopes.

  Extra clothing bags
- Extra swabs
- Speculums
- Toluidine blue dye
- Crime light and glasses
- Toxicology kits
- SANE kit includes swabs, comb, head and pubic hair tape, underwear bag, swab envelopes.
- Urine collection hat
- Sample cup
- Sterile water
- Measurement devices

Supplies stored in SANE office:

- Steps documentation packet
- Patient discharge instructions
- FREPP forms
- Evidence drying stands.
- Camera

Supplies stored in C pod or cupboard next to patient bed.

- CBC, CMP, HIV tubes
- Transfer device
- Empty 10ml syringe
- Tourniquet
- Medicine cups
- Lab sample bag

Other potential supplies.

- Snacks or water (given only after oral swabs completed)
- Clean clothing for patient
- Warm blankets
- Hygiene items for patient

Patient Interview

Patient interviews will guide the exam and evidence collection. It is best to move from less invasive questions to more invasive questions and allow time for patients if they find it difficult. Examiners should explain that these questions are asked during every sexual assault medical forensic exam and why each question is being asked. Follow steps outlined by the State of Montana SANE kit.

General outline below:

Obtain written consent for exam prior to beginning interview. Continue to ask for verbal consent for each exam component.

1. *Date and time of the sexual assault(s):* Timing of the assault is critical to determining if any evidence can be collected this must be the first questions. Both quality and type of evidence as well as interpretation of exam and other injuries will be affected by this. In Montana exam with evidence collection can occur up to 120 hours (5 days) following assault.

2. *Pertinent patient medical history:* OB/GYN history- pregnancies, births, abortions, surgeries/procedures, and menstruation history may affect interpretation of exam findings so should be reviewed prior. Additionally, medical conditions that may place the patient at greater risk should be gathered: bleeding or clotting disorders, immunocompromising condition, or medication.

3. *Recent consensual sexual activity:* Explain to the patient why you are asking this: Trace amounts of consensual partner DNA may be collected and genital microtrauma may be related to consensual activity. Any consensual partner needs to be ruled out when evidence is interpreted. Patients should be aware that there might be a need later to obtain an elimination sample from consensual partners.

- Ask if anal, vaginal, and/or oral, and whether a condom was used.

4. *Post-assault activities of patients*: Patient actions and amount of time since assault affect amount and quality of evidence collection. Determine what activities were performed after assault and before examinations: urination, defecation, consensual intercourse, wiped genitals, wiped body, douched, removed, or inserted anything from vagina, rinsed and/or gargled mouth, brushed teeth, bathed/showered, eaten or drank, smoked, used drugs, or changed clothes

5. *Assault-related patient history*:

- Non-genital injury, tenderness, pain and/or bleeding, and anal-genital injury, pain, and/or bleeding can direct evidence collection and medical care.
- Did strangulation occur? Explain to the patient that this is common in sexual assaults.

6. *Suspect information (if known*):

- Limit suspect information to that needed for exam and evidence collection. Detailed questions will be asked during the investigative interview.
- This is relevant to the forensic exam as forensic scientists rule out cross contact or transfer among patients, suspects, and crime scenes.

- The gender and number of suspects may offer guidance to types and amounts of foreign materials that might be found on patients' bodies and clothing.

7. *Nature of the physical assault(s):*

- Physical surroundings of the assault(s): indoors, outdoors, car, alley, room, rug, dirt, mud, or grass. Other details that may be helpful include which room, and on what surfaces.
- Tactics employed by suspects is crucial to the detection, collection, and analysis of physical evidence.
    - Tactics may include, but are not limited to, use of weapons (threatened and/or injuries inflicted), physical blows, grabbing, holding, pinching, biting, using physical restraints, strangulation, burns (thermal and/or chemical), threat(s) of
    - harm to patient's or loved ones, and involuntary ingestion of alcohol/drugs.
    - Possible suspect injury during the assault may be useful when recovering evidence from patients (e.g., blood) or from suspects (e.g., bruising, fingernail marks, or bite marks).

8. Detection of alcohol- or drug-facilitated sexual assault: Determine occurrence memory loss, lapse of consciousness, or vomiting. Ask whether the patient was given food or drink by the suspect (if the patient knows); or whether the patient voluntarily ingested drugs or alcohol.

STOP

If alcohol or drug facilitated sexual assault occurs stop interview and collect toxicology samples ASAP.

Can be collected within 120 hours of the suspected ingestion but degrades the further away from ingestion it is. Collect prior to medication administration – or document what medications were given prior. Document time of collection. Do not put toxicology samples in the sexual assault.

evidence collection kit.

9. *Description of the sexual assault(s):* An accurate but brief description of acts including:

• Penetration of genitalia (e.g., vulva, hymen, and/or vagina of female patient), however slight, including what was used for penetration (e.g., finger, penis, or other object); • Penetration of the anal opening, however slight. • Oral contact with genitals/anus (of patients by suspects or of suspects by patients). • Other contact with genitals (of patients by suspects or of suspects by patients).	• Nongenital act(s) (e.g., licking, kissing, suction injury, strangulation, and biting) • Other act(s) including use of objects • If known, whether ejaculation occurred and location(s) of ejaculation (e.g., mouth, vagina, genitals, anus/rectum, body surface, on clothing, on bedding, or other). • Use of contraception or lubricants.

EXAM

Collect Debris

- Collect obvious debris on patients' bodies (e.g., dirt, leaves, fibers, and hair) on a collection sheet— package, label, seal, and initial the seal.

Clothing Evidence

- ***Rationale***: Clothing frequently contains important evidence in sexual assault cases. It provides a surface upon which traces of foreign materials, such as semen, saliva, blood, hairs, fibers, and debris from the crime scene, may be found. While foreign matter can be washed off or worn off the body, the same substances often can be found intact on clothing for a considerable length of time following an assault. Damaged or torn clothing may be significant, as damage may be evidence of force (do not cut through any existing holes, rips, or stains on clothing). If the examiner detects damage to the clothing, ask the patient if that damage was related to the assault or present prior to the events in question. Evidence on patients' clothing can be compared with evidence collected from suspects and crime scenes.
    - Common items collected from patients include underwear, hosiery, blouses, shirts, and pants.
    - Coats and shoes are collected less frequently because they are less likely to have evidentiary value and their loss may represent a significant financial

burden for victims. Collect these only if it is determined that there may be evidence on them.

- Transgender individuals may be unwilling to part with prostheses and similar.
- If it is determined that patients are not wearing the same clothing that they did either during or immediately after the assault, examiners should inquire as to the location of that clothing. If that clothing has not been brought to the exam site, information on clothing location should be provided to law enforcement (if involved) so that clothing can be retrieved and examined before any potential evidence is destroyed.
- After drying items place each piece of clothing and collection paper in a separate paper bag, label, seal, and initial the seal.
- The barrier sheet is not submitted as evidence.

Change to gown after clothing and debris collected. Assist as needed.

General physical examination:

- Vital signs, date and time of the exam, physical appearance, general demeanor (using specific, concrete terms (e.g., crying, shaking), behavior, and orientation, and condition of clothing on arrival.
- During the exam, collect evidence as outlined below, and in kit, and photograph anatomy involved in the assault and any injuries.

- Photography: Take at least three photographs:

    1. Take “regional” shots to show injuries in the context and orientation of a body region; these photographs should include easily identifiable anatomical landmarks.

    2. Take medium-range photographs of each separate injury, including cuts, bruises, swelling, lacerations, and abrasions.

    3. Take closeup images of injuries, using the scale. Try to capture subtleties in texture and color.

        - Document pattern injuries caused by an object. Do not use a flash function around an injured eye as it can cause retinal damage.

        - In some cases, a full body photograph may be appropriate to show the scope of injury or state of clothing. However, such photos should be taken, ensuring as much modesty and privacy as possible, through draping and other techniques. Photos taken solely for the purpose of identification should be done with patients fully clothed or in a gown.

Physical findings:

- Document on body diagram forms.
- Observable or palpable tissue injuries (redness, abrasions, bruises, swelling, lacerations, fractures, bites, burns, and other forms of physical trauma). Palpate for tenderness and induration.
- Physiologic changes

- Foreign materials such as grass, sand, stains
- Dried or moist secretions, or positive fluorescence

Alternate light source examination:

- Aids in examining patients' bodies, hair, and clothing to scan for evidence, such as dried or moist secretions, fluorescent fibers not visible in ambient light, and subtle injury. This instrument may be used to assist in visualizing an anal injury, obtaining reliable rectal swabs (if there is a concern about contamination), and identifying and collecting trace evidence.
- With lights off utilize barrier glasses to observe skin for suspicious areas that may be a dry secretion or stain, any moist secretion, any area that fluoresces with longwave ultraviolet light. Collect swabs of identified areas. Use a moist swab to collect dry secretions, followed by a dry swab. Swab moist secretions with a dry swab. Separate swabs should be used for every sample area collected.

Anogenital examination:

- Vulva/Vagina Exam
    - Examine the external genitalia and perineal area for injury, foreign materials, and other findings in the following areas: abdomen, thighs, perineum, labia majora, labia minora, clitoral hood and surrounding area, periurethral tissue/urethral meatus, hymen, fossa navicularis, and posterior fourchette.
    - Then examine the vagina and cervix for injury, foreign materials, and foreign bodies. While the speculum is still in place and after all swabs and evidence

have been collected, any necessary medical cultures may be taken, if medically indicated.

  - Examine the buttocks, perianal skin, and anal folds for injury, foreign materials, and other findings.

- Testes/Penile Exam:
  - examine the external and perineal area for injury, foreign materials, and other findings, including from the abdomen, buttocks, thighs, foreskin, urethral meatus, shaft, scrotum, perineum, glans, and testes.
  - Document whether patients are circumcised.
- Documentation of findings:
  - Record findings from the general physical and anogenital exam on appropriate body diagram forms. Detailed descriptions of findings should be provided as required – Type of injury, color, size, location.
  - During the exam, collect evidence as specified in the evidence collection kit and photograph anatomy involved in the assault according to jurisdictional policy. Follow jurisdictional policy regarding documentation, photography, and collection of bite mark evidence.
- Use of Toluidine Blue Dye (TBD)
  - Used to identify external tissue trauma not visible with naked eye. Should be utilized prior to speculum examination or other instrumentation.
    - Saturate cotton swab with TBD and apply to vulva from 3 o'clock to

9 o'clock not including the hymen and avoiding vaginal vault to areas of tenderness, erythema, or suspected injury and to highlight visible lacerations. May be used on the labia majora, labia minora, posterior fourchette, perineal body and perianal area, and perianal skin folds. Gently stretch skin to allow TBD to cover all perianal skin in between folds.

- Allow to dry for approximately one minute.
- Use water soluble lubricant to remove TBD. Gently blot the area with lubricant on gauze. This will require reapplication of lubricant and several gauze sponges.
- Assess area swabbed for injury revealed by dye and photograph as necessary.

Evidence Collection

Hair Collection:

- Examine head, facial, and pubic hair for secretions, foreign materials, and debris and collect as appropriate Cut matted head, facial, or pubic hairs bearing crusted material (or flake off material if possible) and place in an envelope. Air-dry all specimens, package swabs separately, label, seal, and initial the seals. (see above for collection of debris and foreign materials).
- Collect head hair combings: The purpose of this procedure is to collect hair shed by

suspects that may have been transferred to patients' hair. Hair combings may also reveal other foreign materials.

  - Use the comb and collection paper provided for this procedure.
  - Place the unfolded paper under patients' head and comb hair toward paper.
  - Fold comb with debris/hair into paper.
  - Package paper, label, seal, and initial the seal.

- Pubic hair combings: If the assault involved the genital area of patients.
  - Use the comb and collection paper provided for this procedure.
  - Place the unfolded paper under patients' buttocks and comb hair toward paper (patients may comb).
  - Fold comb with debris/hair into paper.
  - Package paper, label, seal, and initial the seal.
- Reference Samples: Not routinely collect plucked head and pubic hair reference samples.
  - Crime lab may request samples at a later time for analysis.
  - Inform patients of this possibility.

Swab Collection:

- Procedure
  - Avoid contaminating genital/anal/rectal samples by cleansing the perianal area ***after*** external secretions and foreign materials have been collected.
  - Swab any area for which patients relate a history or suspicion of bodily

fluid transfer (e.g., licking, kissing, biting, splashed semen, or suction injury).

- Obtain swabs from any suspicious area that may be a dry secretion or stain, any moist secretion, any area that fluoresces with longwave ultraviolet light.
- Swab bite marks.
- If history is absent or incomplete collect swabs from potentially high-yield areas (e.g., neck, breasts, or external genitalia).
- Use a moist swab to collect dry secretions, followed by a dry swab. Swab moist secretions with a dry swab. Separate swabs should be used for every sample area collected.
- When taking a swab, examiners should take care not to contaminate the collection with secretions or materials from other areas, such as vaginal to rectal or penile to rectal.
- Document any foreign substance or material introduced by health care providers (e.g., lubricating jelly on a speculum or betadine prior to introduction of a catheter).

- Oral sample: Place swabs together to collect specimen from oral cavity between gums and cheeks and under tongue. Remove dentures and swab with same swabs. Air-dry swabs. Package swabs, place in envelope, label, seal, and initial the seal.
- External genital sample: Swab external genital dry-skin areas with swabs (blind swabbing by protocol or history), at least one dry and one moistened with a drop of sterile, distilled, or deionized water, according to jurisdictional policy. Air-dry swabs.

Package swabs, place in envelope, label, seal, and initial the seal.

- Vaginal/cervical sample: Use swabs together to collect a sample from vaginal pool. It is prudent to collect swabs from both the vagina and cervix, regardless of time between assault and exam. Air dry swabs. Package swabs, place in envelope, label, seal, and initial the seal.
- Penile sample: Slightly moisten swabs with distilled water and thoroughly swab the external surface of the penile shaft and glans. Swab all outer areas of the penis and scrotum where contact is suspected. Avoid swabbing the urethral meatus. Air-dry swabs. Package swabs, place in envelope, label, seal, and initial the seals. Immediately following this procedure, any necessary medical cultures should be taken.
- Perineal area sample: If there was vaginal/anal contact, there may be leakage of semen in the perineal area. Use an alternate light source on the anal area and flake off or swab areas of dried secretions using a moist swab followed by a dry swab.

    • Optional—smear swabs on microscopic slides, according to jurisdictional policy.

    • Flaked dried secretions should be placed into the provided container.

  Air-dry swabs and slides and package them separately. Place in envelope, label, seal, and initial the seal.

- Anal sample: Use an alternate light source on the anal area and flake off or swab areas of dried secretions using a moist swab followed by a dry swab. Avoid contact with external skin surfaces. Air-dry swabs. Package swabs and slides, place in envelope,

- label, seal, and initial the seal. At this time, any additional examinations or tests involving the anus should be conducted.
- Buccal swabs: Collect for DNA reference sample for DNA typing rath. If oral copulation is asserted or suspected, a buccal swab or saliva sample for patients' DNA reference may be contaminated. After the oral swab collected patients rinse their mouths with tap water and then expose the inner cheek area. Swab this area with gentle pressure. Air-dry the swab, package, place in envelope, label, seal, and initial the seal. Many samples collected during the exam contain a mixture of secretions. To interpret DNA profile results obtained from these swabs, it is essential to know the DNA profile of patients. Patients' DNA reference samples are used for this purpose.
- Miscellaneous swabs may be collected, depending upon the area of contact noted in the medical forensic history.
- Flaked dried secretions should be placed into the provided container.

Other Evidence Collection:

Menstruation products:

- If female or transgender male patients are menstruating, collect tampons and sanitary napkins. Airdry them as much as possible and then place them in a separate paper collection bag. Tape/seal bags closed; label, seal, and initial the seal.

Fingernail Evidence:

- If patient reports scratching suspects face, body, or clothing or if fibers of other materials

are observed under patients' fingernails, collect fingernail clippings, scrapings, and/or swabbing, according to jurisdictional policy. Package fingernail scrapings and tools used to obtain the sample, label, seal, and initial the seal

Urine Collection:

- Collect at any time if not collected w/toxicology for
    - Document time of collection.
    - Urine collection should be "dirty" in order to preserve evidence and get accurate testing results.
    - Administer a pregnancy test for all patients with reproductive capability using point of care and document in electronic health record.
    - Send to lab for STI testing.

Lab/Med Orders

See included lab and medication recommendations for HIV npep and STIs document.

Project Hospital Specific

- No initial syphilis taken at time of SANE exam.
- Educate patient on importance of follow-up with provider for follow-up HIV
- and syphilis testing – if possible, set up first follow-up for 72 hours post nPEP

initiation.

Labs mentioned in “Laboratory Assessment” section are in your standing orders. Go to patient chart – select orders – type SANE – Select SANE Adult/Adolescent Power Plan – check appropriate boxes to order labs and initial nPeP doses.

- Labs must be collected, resulted, and reviewed by ED physician prior to first dose administration.
- Medications are free if ordered and filled by Billings Clinic pharmacy – ensure patient is aware.
- If you have further questions contact: PEP Consultation Service for Clinicians 1- 888-448-4911 9 am to 8 pm EST, Monday through Friday, and 11 am to 8 pm EST on weekends and holidays.

Infection treatment or prophylaxis:

- All patients should be offered pharmacological prevention for chlamydia, gonorrhea, and trichomoniasis.
- If they desire, medications can be ordered via SANE power plan as described above.
- Review patient allergies prior to medication administration and order alternative medications per power plan algorithm if necessary.
- Prior to medication administration ensure urine has been collected and sent to lab for STI testing.

Pregnancy treatment or prophylaxis:

- Offer all patients with uterus pregnancy prevention.

- Complete point-of-care pregnancy prior to administration.
- If desired and test negative, order prophylaxis via powerplan.
- Administer prophylaxis if desired.
- If the patient has an IUD or Nexplanon, prophylaxis is not required but may be given if the patient is concerned.

APPENDIX E

EXAM FLOWCHART

Appendix E SANE Exam Flowchart