The Effectiveness of Sexual Assault Nurse Examiner (SANE) Programs

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With contributions from Renae Diegel

Rape survivors encounter significant difficulties seeking post-assault health care and medical forensic evidence collection. Numerous studies have found that less than half of survivors treated in hospital emergency departments receive basic services, such as information about the risk of pregnancy, emergency contraception to prevent pregnancy, and information on the risk of STDs/HIV (Amey & Bishai, 2002; Campbell, Wasco, Ahrens, Sefl, & Barnes, 2001; National Victim Survey, 1992; Uttley & Petraitis, 2000). Emergency department personnel often regard the needs of the rape victims as less urgent than other patients, and due to this low priority, it is not uncommon for survivors to wait four to ten hours for the exam to be performed (Littel, 2001; Taylor, 2002). During this wait, victims are not allowed to eat, drink, or urinate so as not to destroy physical evidence of the assault (Littel, 2001; Taylor, 2002). Further complicating matters, emergency department personnel often lack training in medical forensic evidence collection, and those with training often do not perform forensic exams frequently enough to maintain their proficiency (Littel, 2001). Moreover, emergency department physicians are often reluctant to do evidence collection because if subpoenaed to testify they would be challenged on their qualifications, training, experience, and ability to conduct the exam (Littel, 2001). In light of these problems, it is not surprising that emerging research suggests that many victims characterize their interactions with hospital emergency department staff as upsetting and distressing, and they feel they have been "re-raped" (Campbell et al., 1999; Campbell et al., 2001; Ullman, 1996).

To address these problems, communities throughout the United States began involving nurses more actively in the care of sexual assault survivors (Lang, 1999; Ledray, 1999). Sexual Assault Nurse Examiner (SANE) Programs were created whereby specially trained forensic nurses provide 24-hours-a-day, first-response care to sexual assault patients in either hospital or non-hospital settings. This paper will present a brief summary of the structure and functions of SANE programs as they currently exist in the United States, and then will review the empirical research literature on the effectiveness of SANE programs in three domains. Because traditional medical care often leaves survivors feeling "re-raped," SANE programs have sought to provide care in an empowering setting that addresses survivors' emotional and medical needs. As such, this paper will review the evidence on how SANE programs may help survivors' psychological recovery from the rape. Another founding goal for many SANE programs was to improve the quality of forensic evidence collection relative to the methods traditionally used in hospital emergency departments. Evidence pertaining to the success of nurses as forensic evidence collection specialists will be reviewed. Finally, by meticulously documenting injuries and physical evidence, it is possible that SANE programs may increase prosecution rates in their communities, and the few studies that have explicitly tested this hypothesis will be examined. This paper will conclude with summary recommendations for future research and practice issues that need to be examined in order to develop the most effective, evidence-based practices.

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The Structure and Functions of SANE Programs

The International Association of Forensic Nurses (IAFN) maintains a database with information regarding the structure and functions of SANE programs throughout the country. According to their data, there are at least 276 SANE programs throughout the United States and its territories. Most SANE programs are hospital-based (75%) (e.g., housed within hospital emergency departments), but some are located in community setting (25%) (e.g., rape crisis centers or health clinics). Nearly all programs serve adolescents and adults, and approximately half serve pediatric patients as well. SANE programs are staffed by registered nurses or nurse practitioners who conduct medical forensic exams of sexual assault patients (Lang, 1999; Ledray, 1999). These clinicians have received extensive specialized training in forensic evidence collection, sexual assault trauma response, forensic techniques using specialized equipment, expert witness testimony, assessment of injuries, STD treatment, and pregnancy evaluation and treatment (Cohen, Donohue, & Kovener, 1996; Ledray, 1999).

SANE programs are designed to respond to sexual assault patients' emotional and physical needs as well as evidentiary needs for prosecution. First, SANE nurses provide immediate crisis intervention and emotional support for their patients (Ledray, 1999; Littel, 2001; Taylor, 2002). SANE nurses strive to preserve their patients' dignity, ensure that victims are not retraumatized by the evidentiary exam, and assist victims in gaining control by allowing survivors to make the decisions throughout the evidence collection process. Second, many victims are concerned about pregnancy and contracting sexually transmitted diseases from the assault. Most SANE programs offer emergency contraception for sexual assault patients who are at risk of becoming pregnant, and prophylactic antibiotics to treat sexually transmitted diseases that may have been contracted during or from the assault (Lang, 1999; Taylor, 2002). Finally, to meet the evidentiary needs for prosecution, SANE nurses conduct a thorough medical exam and forensic evidence collection (if applicable), which includes: collecting the victim's clothing (if needed), conducting a physical assessment (head to toe) and specimen collection from the body surfaces (skin, hair and nail clippings when appropriate), visual assessment of genital trauma, body fluid and orifice specimen collection, and blood draw and urine specimen for drug analysis (Lang, 1999; Ledray, 1999). Most SANE programs utilize specialized forensic equipment such as a colposcope, which is a non-invasive, lighted magnifying instrument used for examining of the anogenital area for the detection of microlacerations, bruises, and other injuries (Voelker, 1996). A camera can be attached to the colposcope to digitally document genital injuries (Lang, 1999). Toluidine blue dye is also used by some SANE programs in the detection of genital trauma by enhancing the visualization of microlacerations (Cohen et al., 1996; Ledray, 1999). SANE nurses are also trained in identifying patterned injury, documenting injuries, maintaining chain-of-evidence, and providing expert witness testimony (Ledray, 1999).

Evidence of Effectiveness: Psychological Impact

The role of SANE nurses is complex, as they must attend to the medical, forensic, and psychological needs of their patients (Antognoli-Toland, 1985; Littel, 2001; Taylor, 2002). In outlining a national model protocol for forensic and medical evaluation of sexual assault patients, Young, Bracken, Goddard, and Matheson (1992) stated that, "The broad goals of the national model protocol are to minimize the physical *and psychological trauma* to the victim and maximize the probability of collection and preserving physical evidence for potential use in the legal system" (p. 878; emphasis added). Further emphasizing the role of SANE nurses in the psychological recovery of survivors, Fulginiti et al. (1996) noted that "the SANE provides initial emotional support and reassures victims that they are in a safe,

secure environment where people care and will help in their crisis. This begins the healing process" (p. 423). Although it is often the forensic aspects of SANE nurses' work that receive the most attention by the legal and medical communities, Ledray, Faugno, and Speck (2001) emphasize this psychological care dimension when they noted that a SANE nurse is a compassionate and supportive nurse who is also a skilled forensic technician.

Although emotional care is a primary goal of SANE programs, there have been few studies that have systematically evaluated the psychological impact of SANE programs. In a study of the Memphis SANE program, Solola, Scott, Severs, and Howell (1983) found that 50% of victims in their study were able to return to their usual vocation within one month, and in 3 to 6 months 85% felt secure alone in public areas. At the end of 12 months, more than 90% of the survivors were entirely free of their initial assault-related anxieties and emotional discomposure. Unfortunately, this publication did not provide sufficient details regarding the methodology of this study to assess whether the recovery gains were attributable to the SANE program or to "normal" recovery processes. Other research suggests that at the very least, rape survivors perceive SANE nurses as helpful and supportive. In an evaluation of the Minneapolis SANE program, Malloy (1991) surveyed 70 patients in crisis, and found that 85% of the survivors identified the nurses' listening to them as one thing that helped them the most during their crisis period. In the most in-depth study on this topic, Ericksen et al. (2002) conducted semi-structured qualitative interviews with eight survivors who were treated in a Canadian "specialized sexual assault service," which included both specially trained physicians and SANE nurses. The primary goal of this study was to understand what it meant to survivors to receive this kind of care. The authors identified nine major themes in the participants' narratives: 1) they felt they were respected as a whole person—their needs were met and they were treated with dignity and respect; 2) they felt the presence of the nursing staff—they provided information about what to expect and listened to the survivors; 3) they felt safe—the caregivers were women and were sensitive in their care; 4) they appreciated how they were physically touched—the nurses held their hands during the exam; 5) they felt in control—they were given options and were not pushed towards certain choices; 6) they felt reassured—they felt believed and supported by the staff; 7) they felt they were cared for by people with expertise—their care providers knew what they were doing; 8) they felt informed—they were given information and the staff were careful not to overwhelm them with too much information; and 9) they felt cared for beyond the hospital—they received follow-up care or the option for follow-up care. These descriptive data provide insight into how and why SANE programs may be psychologically beneficial to rape survivors, there is a need for larger-scale studies with comparison groups on the short-term and long-term psychological impact of SANE programs on survivors' recoveries.

Evidence of Effectiveness: The Quality of Forensic Evidence Collection

SANE programs emerged not only because traditional hospital emergency department approaches did not pay adequate attention to survivors' emotional needs, but also because the forensic evidence collection itself needed to be improved. Emergency department physicians receive only minimal training in forensics and they perform rape exams relatively infrequently, which has raised concern among victim advocates that the evidence of sexual assault is not being adequately documented (Ledray, 1999; Littel, 2001). SANE nurses sought to address this issue through extensive training and practice in forensic techniques. However, since taking on this new role, SANE nurses throughout the country have been challenged by both the medical and legal communities as to whether they were qualified and skilled enough to perform this task (DiNitto, Martin, Norton, & Maxwell, 1986; Littel, 2001). The clinical case study literature suggests that SANE nurses are not only competent in forensic evidence collection, but they are actually better at it

because of their extensive training and experience. For example, Cornell (1998) noted "with the program, physicians are removed from the role of witness. Now evidence is collected more consistently and adequately" (p. 46). Similarly, Littel (2001) noted that SANE programs have "greatly improved the quality and consistency of collected evidence" (p. 7). Yet, clinical case reports, though remarkably consistent in their conclusions, do not provide definitive evidence of the effectiveness of SANE nurses in forensic evidence collection. Empirical studies that directly compare the evidence collected by SANE nurses and physicians on objective criteria would better inform the debate over whether nurses are competent medical forensic examiners.

To date, there have been only two such comparative studies conducted in the United States. First, Ledray and Simmelink (1997) reported the findings from an audit study of rape kits sent to the Minnesota Bureau of Criminal Apprehension. Twenty-seven kits conducted by SANE nurses were compared to 73 kits collected by physicians or non-SANE nurses with respect to completeness of specimens collected, documentation, and maintenance of chain of custody. Overall, the SANE-collected kits were more thorough and had fewer errors than the non-SANE kits. For example, with respect to completeness of evidence, 96% of the SANE kits versus 85% non-SANE kits collected the swabs to match the recorded orifice of penetration, 92% of the SANE kits versus 15% of non-SANE kits contained an extra tube of blood for alcohol and/or drug analysis, and in 100% of the SANE kits versus 81% of non-SANE kits a blood stain card was properly prepared. In addition, the chain of evidence was broken in non-SANE kits but was always maintained in SANE kits. Although these descriptive data suggest that the SANE nurses' evidence collection was more thorough and accurate, inferential statistics were not reported so it is not known whether these differences were statistically significant.

A larger-scale, Colorado-based study by Sievers, Murphy, and Miller (2003) explicitly tested differences between SANE and non-SANE kits, and also found support for better evidence collection by SANE nurses. Specifically, this study compared 279 kits collected by SANE nurses and 236 by doctors/non-SANE nurses on ten quality control criteria, and found that in nine of these ten categories, the SANE-collected kits were significantly better. The kits collected by SANE nurses were significantly more likely than kits collected by physicians to include the proper sealing and labeling of specimen envelopes, the correct number of swabs and other evidence (pubic hairs and head hairs), the correct kind of blood tubes, a vaginal motility slide, and a completed crime lab form. The Sievers et al. (2003) study provides the strongest evidence to date that SANE nurses are qualified to conduct forensic exams, and in fact, they perform them better than physicians. However, it is important to note that training and experience, not job title or professional degree, are the likely reasons behind these findings. Further underscoring the link between experience and evidence quality, DiNitto et al. (1986) reported that prosecutors in Florida were "satisfied with evidence collected by nurse examiners, crediting the training of the nurse examiners . . . Prosecutors tended to be more pleased with the quality of a physician's evidence *when the examiner had conducted many exams and thus had perfected the techniques*" (p. 539, emphasis added). Because SANE nurses have made it a professional priority to obtain extensive forensic training and practice, it is not surprising that both case study and empirical data suggest they are better medical forensic examiners than physicians and nurses who have not completed such training.

Evidence of Effectiveness: Increased Legal Prosecution of Sexual Assault Cases

SANE nurses provide law enforcement personnel and prosecutors with detailed forensic evidence documenting crimes of sexual assault, which raises the question: Do SANE programs have an impact on prosecution rates in their communities? As with the literature on the quality of forensic exams, case studies suggest that SANE programs increase prosecution (Aiken & Speck, 1995; Cornell, 1998;

Hutson, 2002; Little, 2001; Seneski, 1992). For example, there are reports that SANE programs specifically increase the rate of plea bargains because when confronted with the detailed forensic evidence collected by the SANE nurses, assailants will decide to plead guilty (often to a lesser charge) rather than face trial (Aiken & Speck, 1995; Ledray, 1992; Littel, 2001; Seneski, 1992). Other reports indicate that when cases do go to trial, the expert witness testimony provided by SANE nurses is instrumental in obtaining convictions (O'Brien, 1996; Smith, 1996, as cited in Ledray, 1999).

Yet, there have been few studies that have empirically tested the hypothesis that SANE programs increase prosecution. Studies that report the prosecution rates for SANE programs rarely include a comparison group (e.g., rates before and after the SANE program was implemented, or comparisons to another community without a SANE program). However, there is already an extensive literature on "typical" rates of prosecution in communities without SANE programs. For example, arrest rates in rape cases have been found to vary between 25% (Frazier & Haney, 1996) to 49% (Spohn & Horney, 1992). Prosecution rates are substantially lower with only 14% (LaFree, 1980) to 35% (Spohn & Horney, 1992) of reported cases successfully prosecuted. Only 7% (Galvin & Polk, 1982) to 17% (Chandler & Torney, 1981) of cases end with a guilty verdict or guilty plea bargain. Drawing from these published reports, it can be informative (though not conclusive) to compare arrest and prosecution rates in communities with SANE programs to these figures from communities without SANE programs.

For example, Solola, Scott, Severs, and Howell (1983) examined the legal outcomes for 621 victims who were treated in the Memphis SANE program in 1980. Police reports were filed in 573 of these cases (92%), and 124 resulted in an arrest and successful prosecution (22% of reported cases). However, 135 cases were still pending at the time this study was conducted, and if the rates of arrest and prosecution are examined only in closed cases, the prosecution rate was 28%. In either analysis, the prosecution rates of 22% or 28% are still low, but higher than what have been found for non-SANE cases. Similarly, in her case study of the Santa Cruz County SANE program, Arndt (1988) noted that 42% of sexual assaults involving victims 14 years and older resulted in arrests of the perpetrators and 58% of child molestation cases resulted in arrest, which again is higher than what is typically found for cases that do not involve SANE programs. Ledray (1992) reported that of 417 rape cases in Minneapolis in 1990, police presented 193 cases to the county attorney (46%). Of those 193 cases, 60 were not charged by the prosecutor (31%), 65 defendants plead guilty (34%), 14 went to trial (7%). Six perpetrators were found guilty and eight were found not guilty (the outcomes in remaining 54 cases were not reported). The rates of guilty plea-bargaining reported in this study are markedly higher than what has been found in studies of non-SANE jurisdictions.

As noted previously, a stronger methodological design would include a direct comparison of legal outcomes for SANE cases versus non-SANE cases, and to date, there has been only one such study. Crandall and Helitzer (2003) compared the legal outcomes for sexual assault cases seen at the University of New Mexico's Health Sciences Center for the two years prior to the inception of a SANE program (1994-1996) (N=242) and four years afterwards (1996-1999) (N=715). A significantly higher percentage of victims treated in the SANE program reported the assault to the police than did before the SANE program was launched in this community (72% versus 50%) and significantly more survivors had evidence collected using approved kits (88% versus 30%). Police filed more charges of sexual assault post-SANE as compared to pre-SANE (7.0 charges per perpetrator versus 5.4). The conviction rate for charged SANE cases was also significantly higher (69% versus 57%), resulting in longer average sentences (5.1 versus 1.2 years). These data provide the strongest evidence yet that SANE programs can have a beneficial impact on the prosecution of sexual assault cases.

Recommendation for Future Research and Practice Issues

The current literature on SANE programs consists primarily of case study reports, with few empirical studies that have tested the psychological and legal effectiveness of SANE programs. From this body of work, it appears that SANE programs are having beneficial effects on rape survivors' psychological well-being and that they are improving the prosecution rates of sexual assault crimes. However, such conclusions are tentative because most published studies have not included adequate methodological controls or comparisons to rigorously test the effectiveness of SANE programs. As such, the current literature can be helpful to the advocacy community and SANE practitioners in that it provides preliminary evidence of effectiveness of this approach to treating sexual assault survivors, which may be helpful when advocating with local communities to start new SANE programs. If individual SANE programs have the time and resources to conduct formalized program evaluations, this review suggests that it is imperative to attune to the methodological design issues. Local evaluations that provide not only descriptive data about individual programs, but also comparative data, such as how prosecution changed in communities with the emergence of a SANE program, would make important substantive contributions to the developing literature on SANE programs.

In addition to the need for evaluation of local programs, larger-scale research studies that examine the effectiveness of SANE programs are also warranted. The positive effects that have been reported in smaller-scale case studies need to be replicated in larger-scale methodologically rigorous research studies. If indeed these positive effects are replicated, it will also be important to understand *why* SANE programs are having such benefits. For example, with respect to psychological recovery, how and why do the services of SANE programs contribute to survivors' emotional well-being? Is it that SANE programs do not "re-rape" victims, and hence they have less distress? Is it that SANE programs provide coordinated care and referrals to counseling services for survivors? These issues of process are equally important when examining prosecution outcomes. For example, why are prosecution rates higher for communities with SANE programs? Is it because the quality of the evidence is stronger (as is suggested by Sievers et al., 2002), or because of the expert testimony of the SANE nurses is compelling (as is suggested by Ledray & Barry, 1998), or because SANE programs provide survivors with emotional support and resources that are needed to withstanding the lengthy process of prosecution (as is suggested by Seneski, 1992)? Understanding the mechanisms by which SANE programs are having positive psychological and legal effects are an important next step for the field. In addition, future work needs to move beyond examining individual-level outcomes to examine how SANE programs create community-level change in the response to sexual violence. SANE programs may be helpful to individual survivors, but also may be instrumental in creating an alternative community response to violence against women.

With respect to practice issues in the field, additional work is needed that articulates how SANE programs respond to the needs of diverse populations. Whereas SANE training includes instruction on cultural sensitivity, the extant literature does not yet address how SANE programs respond to the needs of people of color, LGBT patients, individuals with disability, and other aspects of diversity. Because these issues are central in SANE training, it is reasonable to assume that program staff are attuning to these issues, but it would be helpful if practitioners in the field would share (through professional journals and newsletters) how their programs address issues of diversity. In addition, many SANE programs have been facing budget cuts and numerous communities throughout the United States do not have access to forensic nurses. Researchers and practitioners need to work together to document the extent of this problem and the impact it is having on patient care.

To address these research and practice needs, it is important that researchers and SANE program

practitioners develop strong collaborative relationships. The work of SANE programs is remarkably complex, and research and evaluation projects would benefit tremendously from the diversity of perspectives that come from collaborative partnerships.

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In Brief:
The Effectiveness of Sexual Assault Nurse Examiner (SANE) Programs

Rape survivors who seek post-assault health care and medical forensic evidence collection from emergency rooms often do not receive basic services, wait long hours, and have evidence collection conducted by personnel that lack training and experience. Sexual Assault Nurse Examiner (SANE) Programs were created to alleviate these problems. This paper presents a brief summary of the structure and functions of SANE programs as they currently exist in the United States, and then reviews the empirical research literature on the effectiveness of SANE programs in three domains: psychological recovery of victims, forensic evidence collection and prosecution rates. This paper concludes with summary recommendations for future research and practice issues to help develop the most effective, evidence-based practices.

Because traditional medical care often leaves survivors feeling "re-raped," SANE programs have sought to provide care in an empowering setting that addresses survivors' emotional and medical needs. Although emotional care is a primary goal of SANE programs, there have been few studies that have systematically evaluated the psychological impact of SANE programs. The available literature is limited, but suggests that rape survivors perceive SANE nurses as helpful and supportive.

Another founding goal for many SANE programs was to improve the quality of forensic evidence collection relative to the methods traditionally used in hospital emergency departments.
The clinical case study literature suggests that SANE nurses are not only competent in forensic evidence collection, but they are actually better at it because of their extensive training and experience. Yet, clinical case reports, though remarkably consistent in their conclusions, do not provide definitive evidence of the effectiveness of SANE nurses in forensic evidence collection. Empirical studies that directly compare the evidence collected by SANE nurses and physicians on objective criteria would better inform the debate over whether nurses are competent medical forensic examiners. To date, there have been only two such comparative studies conducted in the United States. Both studies found support for better evidence collection by SANE nurses. However, it is important to note that training and experience, not job title or professional degree, are the likely reasons behind these findings.

Finally, by meticulously documenting injuries and physical evidence, it is possible that SANE programs may increase prosecution rates in their communities. As with the literature on the quality of forensic exams, case studies suggest that SANE programs increase prosecution. To date, there has been only one study that included a direct comparison of legal outcomes for SANE cases versus non-SANE cases and found strong evidence that prosecution of sexual assault cases was higher in SANE cases.

From this body of work, it appears that SANE programs are having beneficial effects on rape survivors' psychological well-being and they are improving the prosecution rates of sexual assault crimes. However, such conclusions are tentative because most published studies have not included adequate methodological controls or comparisons to rigorously test the effectiveness of SANE programs. To address these research and practice needs, it is important that researchers and SANE program practitioners develop strong collaborative relationships.

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