

THE ROLE OF THE REGISTERED NURSE IN COLLECTING AND
DOCUMENTING PHYSICAL FORENSIC EVIDENCE RELATED
TO FATAL GUNSHOT WOUNDS: RECOMMENDATIONS
FOR POLICY AND PRACTICE

A DISSERTATION

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BY

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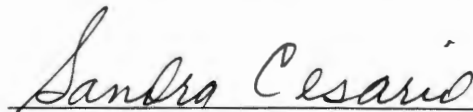
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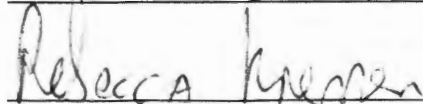
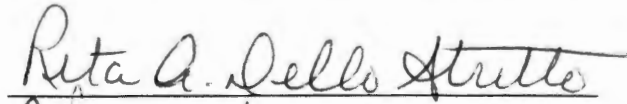
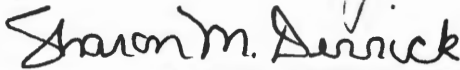
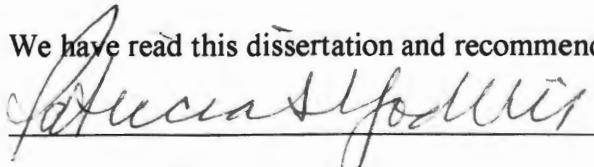
To the Dean of the Graduate School:

I am submitting herewith a dissertation written by Angela F. Snow entitled "The Role of the Registered Nurse in Collecting and Documenting Physical Forensic Evidence Related to Fatal Gunshot Wounds: Recommendations for Policy and Practice." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Nursing Science.



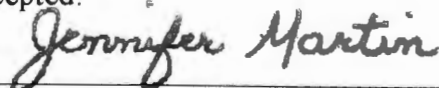
Sandra Cesario, PhD, Major Professor

We have read this dissertation and recommend its acceptance:



Associate Dean, College of Nursing

Accepted:



Dean of the Graduate School

DEDICATION

To my loving dad, Robert Snow (Bob); even though
you are no longer on this earth, you will always
be in my heart and I know I make you proud.
I love and miss you.

ACKNOWLEDGMENTS

I thank and love my Lord and Savior for his unconditional grace and love. I am always at his mercy and it is because of him I am able to do anything.

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ABSTRACT

ANGELA F. SNOW

THE ROLE OF THE REGISTERED NURSE IN COLLECTING AND DOCUMENTING PHYSICAL FORENSIC EVIDENCE RELATED TO FATAL GUNSHOT WOUNDS: RECOMMENDATIONS FOR POLICY AND PRACTICE

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The purpose of this study was two fold. The first was to determine the quality of the forensic physical evidence, specifically clothing, cartridges and gunshot residue preservation, collected and documented in the medical examiner record. Looking at data retrospectively gives a historical analysis that will provide a systematic review of evidence collection practices. In this case, the data examined were collected by RNs in Harris County from 2004 to 2006. The second purpose was to propose nursing practice guidelines and standard operating procedures to preserve forensic evidence without interfering with emergency life-saving care efforts. The research questions that guided this study were: 1) What percentage of fatal gunshot wound physical forensic evidence documented in the medical examiner record from 2004 to 2006 in Harris County was collected by registered nurses? 2) Of the investigations formally filed in a court of law, what percentage of fatal gunshot wound physical forensic evidence collected by RNs as documented in the medical examiner record from 2004 to 2006 in Harris County was admissible in legal proceedings? 3) What policy and practice implications can be derived from the evidence related to the RN role as found in research questions 1 and 2? 4) What

are the similarities and differences of these roles when compared to the standardized Sexual Assault Nurse Examiner (SANE) protocol? 5) Does the hospital trauma level designation and accreditation reflect differences in the amount and type of gunshot wound physical forensic evidence collected by RNs?

The study was a retrospective chart review examining medical examiner records from 2004-2006 of fatal gunshot wound victims dying in a hospital. The medical examiner record consists of hospital records, police reports, and investigator and autopsy reports, including photographs and subpoenas. An instrument derived from national standards and protocols, was developed specifically for this study.

A total of 451 records was reviewed and analyzed focusing on physical forensic evidence from gunshot wound victims: clothing, cartridges and gunpowder residue. The findings revealed current nursing practice when collecting evidence from fatal gunshot wound victims. The review also provided guidance in development of evidence collection hospital policies and procedures and clear nursing roles when caring for these victims.

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CHAPTER I

Because of the prevalence of violence and violent crimes, our society expects health care professionals to provide quality care to victims of violence. Health care providers, especially emergency department (ED) registered nurses (RNs), frequently care for victims of violence (AACN, 1999; Lynch, 1991; Sekula, 2005) and the emergency department is most often the initial location of the care provided to these victims (Fulton & Assid, 2006). The ED RNs' ability to recognize, collect and preserve physical evidence plays a vital role in the investigation of a crime and may influence the outcome of legal proceedings (Sekula, 2005). It is common for evidence, such as clothing, bullets and gunshot residue, to be discarded in the emergency department because a life is at stake and evidence is deemed of little immediate value (Smialek, 1983) in providing critically needed care. However, it is no longer accepted practice to destroy crucial evidence to save a life (Sekula, 2005), and it is a nurse's duty to become involved in forensics (Hoyt, 2006). Evidence that is destroyed by health care professionals can result in perpetrators of abuse and violence not being prosecuted (Hoyt, 2006; Sekula, 2005).

Rationale for the Study

In 2005, 2.1 million people were treated in U.S. emergency departments for injuries inflicted by violent acts (CDC, 2005); at least 51,000 people died as a result of violence, and 58% (29,684) of these violent deaths were caused by firearm injuries. In

2005, the Centers for Disease Control and Prevention reported accidents as the 5th leading cause of death, intentional self-harm (suicide) as the 11th and assault (homicide) as the 15th, where the majority of accidents, suicides and homicides were the result of firearm injuries (Kung, H-C, Hoyert, D.L., Xu, J., & Murphy, S.L., 2008). Despite the large number of victims and the cost, funding for research in forensic evidence collection is not as readily available as it is for other health concerns, such as HIV/AIDS (Baroni & Richmond, 2006).

A review of the literature produced numerous guidelines on how to collect and document evidence but gave few references related to implementation. As it is not known to what extent these guidelines are implemented by practicing RNs, the purpose of this study was two fold. The first was to determine the quality of the forensic physical evidence, specifically clothing, cartridges and gunshot residue preservation, collected and documented in the medical examiner record. Looking at data retrospectively gives a historical analysis that provides a systematic review of evidence collection practices. In this case, the data examined were collected by RNs in Harris County from 2004 to 2006. The second purpose was to propose nursing practice guidelines and standard operating procedures to preserve forensic evidence without interfering with emergency life-saving care efforts.

Conceptual Framework

A systems framework presented by Donabedian in 1966, *Evaluating the Quality of Medical Care*, provided the structure for this study as it describes program evaluation

in terms of *structure*, *process* and *outcome*. Donabedian's work is accepted widely as a framework to study complex issues.

Structure refers to the physical and organizational setting in which care is provided (Donabedian, 1980). Structure can include human, physical and financial elements. This element is important because if structure is imbalanced, there might be an increase or decrease probability in good, quality performance.

Process is a set of activities that occurs within or between healthcare professionals and patients (Donabedian, 1980). Process can be measured by direct observation or a review of recorded information. Donabedian described the process of care as normative behavior. Norms are defined from science or ethics and values of society. This element examines appropriateness, completeness of current care and evidence of preventive management in health and illness. One way to evaluate process is against national standards.

Donabedian (1980) explained outcome as a change in patients' current and future health status, including patient attitude, knowledge and health-related behavioral changes, which can be attributed to antecedent health care. Thus, outcomes of any health interaction are influenced by the structure in which the care was provided and the process in which the care was delivered.

Assumptions

1. Without procedure or protocol, quality care is not standardized.
2. All gunshot wound victims are attended to by pre-hospital emergency medical personnel and an emergency department.

3. Society, the health care system and judicial system value the role of the nurse in forensic evidence collection.
4. Society, the health care system and judicial system value forensic physical evidence from fatal gunshot wound victims.

Research Questions

The research questions that guided this study were:

1. What percentage of fatal gunshot wound physical forensic evidence documented in the medical examiner record from 2004 to 2006 in Harris County was collected by registered nurses?
2. Of the investigations formally filed in a court of law, what percentage of fatal gunshot wound physical forensic evidence collected by the registered nurse as documented in the medical examiner record from 2004 to 2006 in Harris County was admissible in legal proceedings?
3. What policy and practice implications can be derived from the evidence related to the registered nurse role as found in research questions 1 and 2?
4. What are the similarities and differences of these roles when compared to the standardized Sexual Assault Nurse Examiner (SANE) protocol?
5. Does the hospital trauma level designation and accreditation reflect differences in the amount and type of gunshot wound physical forensic evidence collected by the registered nurse?

Definitions of Terms

Forensic is defined as belonging to or pertaining to courts of law (Lynch, 2006; Merriam-Webster Online Dictionary, 2008) and there are general types of evidence: physical, testimonial and documentary evidence (Fulton & Assid, 2006; Geberth, 2006). Physical evidence is defined as any tangible item that tends to prove or disprove a point in question (Geberth, 2006; Lynch, 2006c). Physical evidence includes, but is not limited to, blood, semen, soil, hair, bullets, fabric, clothing, residue, and glass. Testimonial evidence is any oral or written statement presented as proof of truth in a court of law (BusinessDictionary.com, 2009). Documentary evidence consists of items such as letters, notes and/or papers examined to locate and identify fingerprints, determine authorship in suicide notes and to ascertain authenticity (Geberth, 2006). This study focused on physical evidence. Physical evidence that is documented and collected in the medical record specifically comprised of clothing, cartridges and gunshot residue.

Gunshot wounds are defined as any wound resulting by a firearm (Besant-Matthews, 2006). A firearm is a weapon from which a bullet is discharged by gunpowder (Merriam-Webster Online Dictionary, 2009). A firearm weapon can include a pistol, shotgun, revolver or a rifle. When a firearm is discharged, four key events occur: “fire/flame is emitted from the barrel; smoke then follows this flame; the bullet emerges from the barrel; additional smoke and grains of burned and unburned gunpowder follow the bullet out of the barrel” (Geberth, 2006, p. 315-316). When the bullet enters the human body, depending on body location the injury can lead to death. The injury can be perforating or penetrating. A perforating injury occurs when a bullet enters and exits

the body compared to a penetrating injury occur when the bullet remains in the body. For the purposes of this study a fatal gunshot wound is death as a result of a gunshot wound however perforating or penetrating injuries were not identified.

Gunshot wound injuries resulting in death can be acute or delayed. An acute death occurs immediately after the injury. A delayed death occurs months or years after the initial injury. For this study, a delayed death occurs when the client is discharged from the hospital following the gunshot injury and returns to the hospital, months or years later, for additional treatment yet dies as a result of the original injury. The delayed death records were excluded because initial injury records were unavailable.

Clothing is defined as any item that covers the human body (Merriam-Webster Online Dictionary, 2009). Clothing includes, but is not limited to, shirt, pants, shoes, socks, undergarments and head coverings.

A cartridge is “made up of four components: (1) a cartridge case, (2) a projectile or projectiles (bullet or slug, wadding, pellets), (3) gunpowder, and (4) a primer” (Chaklos & Kuehner, 2006, p. 336,337). A bullet is part of the cartridge and is “the projectile propelled down the barrel of the gun toward the target” (McDonough, 2006, p. 465).

Gunshot residue is burnt gunpowder and particles that emerge from the muzzle and halt either on the firearm or any surface close to the firearm (Chaklos & Kuehner, 2006) and can be preserved by paper bags on the hands.

Sexual Assault Nurse Examiner (SANE) protocols are manuals written by The Office of the Attorney General in Texas, The U.S. Department of Justice Office for

Victims of Crime and the American College of Emergency Physicians listing step-by-step instructions on how to collect evidence from sexual assault victims. All these protocols are directed towards standardization of care for the sexual assault patient.

In the United States there are two types of major justice systems: civil and criminal (Cafardi, 2006). For the purposes of this study, legal proceedings are trials dealing with the administration of criminal law or the law of crimes. In a criminal law proceeding, the prosecuting unit of government brings criminal charges against the accused.

Limitations

1. Medical examiner records are sometimes incomplete.
2. Hospital documentation methods change regularly and differ from institutions.
3. Registered nurse practices change and the years examined (2004-2006) may not reflect current practices.
4. Legal proceeding documentation is only available in appeal cases, not original legal proceedings.
5. Legal proceeding documentation in appeal cases are unavailable because of active cases or it has been checked out by attorneys.
6. Few homicide cases enter legal proceedings.

CHAPTER II

REVIEW OF THE LITERATURE

This section presents a brief overview of the history and definition of forensic nursing. The most prominent and detailed area of forensic nursing, the sexual assault nurse examiner, is explored. A detailed literature search solely focusing on sexual assault is not the intent of the author; there is a plethora of scientific literature addressing that topic. The intent is to use the evolution of sexual assault patient treatment including national recognition and funding, standardized protocol for patient care and research examining legal outcomes of sexual assault cases as the construct for gunshot assault. Lastly, gunshot wound evidence collection literature is discussed.

History of Forensic Nursing

Nurses cared for forensic patients since the 18th century. Lynch (1998) reported in the 18th century that midwives testified in cases of pregnancy and rape (as cited in Burgess, Berger & Boersma, 2004) and virginity status of women planning to marry into royalty. Florence Nightingale also cared for forensic patients. She treated wounded British soldiers in the Crimean War (Schuyler, 1992). On June 26, 1800 in a trial for attempted murder of King George III, the jury found the defendant Hadfield not guilty under the influence of insanity (Kettles & Wood, 2006). Hadfield was confined to a secure building specifically for persons detained under the Criminal Lunatics Act of 1800 and the judge instructed Hadfield's care to be 'all mercy and humanity being shown.'

The building became the Broadmoor High Security Hospital, the first forensic psychiatry unit where nurses delivered care instead of treatment by correctional officers.

What is Forensic Nursing?

Forensic nursing is an innovative, evolving specialty that seeks to bridge the gap between health care and criminal justice systems (Benak & Rose, 2003). Forensic nurses care for the victim, family, significant other(s), alleged perpetrator and the general public (IAFN/ANA, 1997, p. v). Forensic nursing represents a holistic approach to the treatment of victim and perpetrators and patient advocacy through the protection of their civil and human rights (Lynch, 1993a). The International Association of Forensic Nurses defines forensic nursing as:

the application of forensic science combined with the bio-psychological education of the registered nurse, in the scientific investigation, evidence collection and preservation, analysis, prevention and treatment of trauma and/or death related medical-legal issues (IAFN/ANA, 1997, p. v).

Evolution of Sexual Assault

In the mid-1970s United States emergency department nurses recognized a particular type of trauma patient not receiving the same type of care compared to other trauma patients. This patient was the rape victim. Hospitals turned away rape victims because of the lack of education, lack of protocol for collecting evidence and the concern for testifying in court (Ledray & Arndt, 1994). In addition, nurses were generally not taught how to care for rape victims (Holloway & Swan, 1993; Speck & Aiken, 1995), thus leading to misinterpretation, mishandling or omission of vital forensic evidence

(Lynch, 1993b). Rape victims waited to see a health care provider for extended amounts of time as other urgent patients were treated by the staff (Speck, 1995; Sandrick, 1996). And the victim was not allowed to eat, drink, wash or use the bathroom until after the examination.

The landmark study by Burgess and Holmstrom (1974) examined rape victim's behavioral, somatic and psychological reactions that occurred as a result of a rape or attempted rape and coined *rape trauma syndrome*. This study also offered nursing interventions to assist rape victims in recovery. Burgess and Holmstrom (1973) stated the emergency department nurse "is in an optimal position to have a major therapeutic impact on the experience of the rape victim in the hospital system" (p. 1744). Emergency departments in Memphis, TN in 1976 (Speck & Aiken, 1995), Minneapolis, MN in 1977 (Ledray & Chaignot, 1980), and Amarillo, TX in 1979 (Antognoli-Toland, 1985) initiated programs utilizing emergency department registered nurses to complete the entire medical, forensic examination of rape victims. The term Sexual Assault Nurse Examiner (SANE) was born. In Boston in 1973 (Burgess & Holmstrom, 1973) and Connecticut in 1974 (Moynihan & Coughlin, 1978) programs were initiated using a multidisciplinary approach to treat rape victims where registered nurses completed the gynecological examination, not the physician.

Unfortunately, these programs were working independently until the late 1980s. The Journal of Emergency Nursing assisted in connecting these programs (ENA, 1991) and aided in communication and collaboration. In 1992 the pioneers of sexual assault

nurse examiner programs formed the International Association of Forensic Nurses (IAFN) (Ledray & Arndt, 1994; Ledray, 2006).

Sexual Assault Standards of Care

The 1994 Violence Against Women Act (VAWA), VAWA Title IV of the 1994 Violent Crime Control and Law Enforcement Act, acted as the impetus toward research and education on preventive measures for violence against women. The Act changed laws for repeat offenders, provided “grants to combat violent crimes against women” (1994, p. 115) and increased education to law enforcement and judicial agents (Ford, Backman, Friend & Meloy, 2002).

In 1996 the IAFN published standards of practice for sexual assault nurse examiners (IAFN, 1996). And in 1998, the Office of the Attorney General in Texas produced the *Texas Evidence Collection Protocol*. This protocol details crime victims’ rights, step-by-step instructions to collecting evidence and recommended equipment for performing the sexual assault examination. In 1999, The U.S. Department of Justice Office for Victims of Crime department issued a Sexual Assault Nurse Examiner Development and Operation Guide. In addition the American College of Emergency Physicians produced a manual towards the evaluation and management of the sexually assaulted or sexually abused patient. All these protocols are directed towards standardization of care for the sexual assault patient.

Legal Outcomes of Sexual Assault Forensic Evidence

The awareness of sexual assault nurse examiners has increased sexual assault reporting. The relationship between evidence collected and the legal resolution has

differing scientific study results. In the following an analysis of scientific studies examining sexual assault evidence and legal outcomes will be discussed.

Rambow, Adkinson, Frost & Peterson (1992) performed a retrospective review of sexual assault examinations and legal outcomes to determine the usefulness of the protocol at Hennepin County Medical Center. In 1983, 182 patients agreed to a sexual assault evidentiary examination performed by physicians and ninety-five percent agreed to the complete examination. Half of these women suffered from some type of injury including abrasions, contusions or minor laceration and 10% suffered from vaginal or perineal injuries. Charges were not charged in over half of the cases because of lack of assailant identification or the victim decided not to press charges. Fifty-three cases had potential for prosecution. Eighteen cases showed significant association between presence of trauma and successful prosecution ($\chi^2 = 7.85$ with one degree of freedom; $P < .01$). The authors state if there were no protocol for sexual assault victims, injuries would have been missed. Also, the protocol was effective because no case was dismissed because of proper chain of custody or failure to collect evidence.

McGregor, Le, Marion & Wiebe (1999) examined ninety-five medical charts from 1992 focusing on individual medical findings and legal outcomes. Medical charts were researched specifically for physician injury documentation relating to legal outcomes. A total of 95 cases was reviewed and 31 cases charges were charged. Physician documentation of victim injury and legal outcomes were significantly associated (OR 3.33, 95%, CI 1.06-10.451; $p < 0.001$) and an association of victim knowledge of assailant was associated with charge-laying (OR 4.58, 95% CI 1.52-13.70).

The authors stressed the importance for meticulous documentation on sexual assault cases to influence legal outcomes however the presence of sperm was not associated with charge-laying. And the authors asked if the swab collection to detect sperm is appropriate.

Du Mont, McGregor, Myhr & Miller (1999) retrospectively reviewed sexual assault cases reported in Ontario in 1994 and British Columbia in 1992. A total of 236 cases was reviewed and charges were laid in less than one half of the cases. The authors discovered if the victim *reported* penetration, charges would be laid nine times more compared to non-penetrating assault. Also, if the assailant was known to the victim, charges would be laid six times more compared to stranger assault. The presence of sperm/semen is difficult to detect because of the delays in the examination, however when victims self reported penetration benefited more than actual semen detection in regards to legal proceedings.

A study by Gray-Eurom, Seaberg & Wears (2002) retrospectively examined the association between historical and physical evidence and judicial outcomes in sexual assault patients. Trauma evidence was discovered in 57% and in 31% spermatozoa were noted. Trauma varied from abrasions, contusions, bite marks and burns to the body and genital area. Of the 801 cases, 118 cases proceeded to prosecution. Of the 118 cases, seventy-five percent of assailants were found guilty. If a weapon was used, if trauma was present and the victim less than 18 years old, a stronger association was noted. The authors stress the importance of documentation, especially to substantiate the victim's testimony and to confirm an assault took place.

McGregor, Du Mont and Myhr (2002) performed a retrospective chart review examining the relationship between sexual assault injury and laying of charges. A total of 462 cases was reviewed for demographics, medical-legal findings, police and the forensic scientist results. Medical-legal findings were separated into emotional state, genital injury and clinical injury extent score. The forensic scientist results were presence or absence of sperm-semen during analysis. Logical regression revealed a significant association with increased odds of charges filing between the police documentation of forensic samples and clinical injury extent score (mild: OR 2.85, 95% CI 1.09 to 7.45; moderate: OR 4.00, 95%, CI .63 to 9.84; severe: OR 12.29, 95%, CI 3.04 to 49.65, respectively). A severe clinical injury extent score was the only variable associated with conviction. However, when genital injury was substituted for a clinical extent score, no significant association was shown. The authors state that there was a threefold increase in possibility of charges being filed if the victim allowed a sexual assault examination performed despite the findings.

Wiley, Sugar, Fine & Eckert (2003) also examined legal outcomes of sexual assault victims. A chart review revealed 888 sexual assault reports from January 1997 to September 1999. The results indicated patients who had a forensic examination had a higher rate of legal resolution (35%) compared to those who declined a forensic examination (13%). A significant association was discovered between victim and known assailant and anogenital trauma and legal outcome. However, 52% of victims with a legal outcome did not have any anogenital trauma.

Tintinalli & Hoelzer (1985) and Du Mont & Parnis (2000) reported similar findings. Both studies retrospectively studied sexual assault cases in comparison to legal outcomes. The studies reported no correlation between sperm and trauma with guilty verdicts or arrests. The studies had small sample sizes, however the findings were the same.

The treatment of sexual assault victims has evolved over time. That treatment and collection of forensic evidence is standardized because of national attention and federal funding for education and research. Even though there are opposite judicial research outcomes, the standardization approach for treatment of sexual assault victims enabled evidence collected by healthcare providers admissible in legal proceedings; regardless of the judicial outcome.

Gunshot Wound Evidence Collection

Healthcare providers rarely received formal training in forensic evidence collection (Malestic, 1995). Several publications described how to properly collect forensic evidence, including gunshot wound (GSW) evidence (Mittleman, Goldberg & Waksman, 1983; Smialek, 1983; Meserve, 1992; Green, 1993; Muro & Easter, 1994; Easter & Muro, 1995; Aiken, 1996; Pasqualone, 1996; Rutty, 2000; Nayduch, 1999; Wick, 2000; McCracke, 2001; Evans & Stagner, 2003; Stevens, 2004; Assid, 2005; Yost & Burke, 2006). These publications were consistent with how to collect and preserve forensic evidence. The emergency department was frequently the initial location of the care provided to victims of violence (Fulton & Assid, 2006). Nurses are in vital positions because they are usually available during patient care and collection of evidence

(Malestic, 1995; Hoyt, 1999). This position plays a role in the investigation of a crime and may determine the outcome in legal proceedings (Goll-McGee, 1999; Lynch, 1991; Sekula, 2005). However, Meserve (1992) reported numerous cases were tried and because of the failure of healthcare personnel to properly retrieve and package evidence or cleanse wounds before documentation “trace evidence would be washed away in a sea of wound-cleansing liquid” (Doney, 1988, p. 18). It is no longer accepted practice to destroy crucial evidence to save a life (Assid, 2005; Sekula, 2005) and it is a nurse’s duty to become involved in forensics (Hoyt, 2006). Evidence that is destroyed by healthcare professionals can result in the inability to prosecute perpetrators of abuse and violence (Goll-McGee, 1999; Hoyt, 1999; Hoyt, 2006; Lynch, 1991; Sekula, 2005) allowing them to be set free and is an injustice to society and victims (Williams, 1995; Muro & Easter, 1994; Hoyt, 1999).

Gunshot wounds account for 30,694 deaths ((Kung, Hoyert, Xu & Murphy, 2008). Victims of GSW’s are suicides, homicides or accidental deaths. Predominately these victims receive some type of medical attention prior to death, yet some evidence that will reconstruct the circumstance is lost or ignored (Smialek, 1983). Clothing is a very common item that is ignored or discarded. Clothing assists in determining range of fire, entrance and exit wounds, location of wounds and trace evidence such as paint chips from a hit and run automobile accident (Mittleman, Goldberg & Waksman, 1983; Smialke, 1983; Eckert, Bell, Stein, Tabakman, Taff & Tedeschi, 1986; Meserve, 1992). In some situations, clothing is placed in plastic bags. Plastic bags trap moisture, cause mildewing and thus destroy the evidence integrity (Assid, 2005).

Bullets are extremely important in forensic cases. GSW victims usually will go to the operating room immediately upon arrival to the hospital. If health care providers remove any projectiles, the object must be safeguarded against alteration (Wick, 2000; Evans & Stagner, 2003). However, projectiles are removed from the body and discarded because of lack of education (L. Sanchez, MD, personal communication). In these situations, medical personnel wreak unintentional havoc for criminal investigations due to the lack of evidence (Wick, 2000).

Gunpowder and primer residue aids in determining intent of the incident of the victim. Gunpowder residue assists in shaping the distance from which the weapon was fired. Primer residue assists in identifying from what hand the weapon was fired. This evidence is extremely important when investigating if the patient was the shooter or the victim. A simple way health care providers can assist in this investigation is by placing paper bags over both hands securing the bags with tape.

Understanding what evidence is involved in gunshot wound victims is the first step in identifying and collecting this evidence. Gunshot wound evidence, clothing, bullets and gunpowder residue, assist in the criminal investigation of the incident and is imperative for health care providers to secure and provide to the appropriate agency. There are several publications listing how to collect this evidence however there is no national standardization. Utilizing the sexual assault progress offers a solid basis for standardizing practice for gunshot wound victims.

CHAPTER III

USING A SEXUAL ASSAULT MODEL FOR ALL VICTIMS OF VIOLENCE

Nurses are known for being honest, ethical and caring for patients, including patients that are victims of violence (Saad, 2008). Nurses first began documenting victims of violence during the 18th century. Virginia Lynch (1998) reported that midwives testified in cases of rape (as cited in Burgess, Berger & Boersma, 2004) and of virginity status of women planning to marry into royalty. The mother of nursing, Florence Nightingale, also cared for victims of violence; she treated wounded British soldiers in the Crimean War (Schuyler, 1992). The first forensic psychiatry unit was formed in Great Britain after a man accused of the attempted murder of King George III was found not guilty by reason of insanity and ordered confined in a hospital instead of a jail (Kettles & Wood, 2006). Most individuals believe forensic patients are dead however forensic patients are all types of patients.

Nurses caring for sexual assault victims established the foundation for forensic nursing in the United States. During the mid-1970s, emergency department nurses recognized rape victims were not receiving the same standard of care as other trauma patients. This patient was the rape victim. Hospitals turned away rape victims, primarily due to lack of education, lack of protocol for collecting evidence, and an apprehension for testifying in court (Ledray & Arndt, 1994). Also, nurses were generally not trained in caring for sexual assault victims (Holloway & Swan, 1993; Speck & Aiken, 1995), which

led to misinterpretation, mishandling and/or omission of vital forensic evidence (Lynch, 1993b). Rape victims often waited extended periods of time to receive treatment because higher acuity patients were treated first (Speck & Aiken, 1995; Sandrick, 1996).

Landmark Developments Toward Standardization

Burgess and Holmstrom (1973) examined rape victim's behavioral, somatic and psychological reactions that occurred as a result of rape or attempted rape and identified these reactions as *rape trauma syndrome*. This study offered nursing interventions to assist rape victims in recovery, "the emergency department nurse is in an optimal position to have a major therapeutic impact on the experience of the rape victim in the hospital system" (p. 1744) and "the humanistic skills of the nurse will make a major difference in how the victims feels she has been treated at the hospital" (p. 1745).

In the mid 70s, emergency departments began initiating programs utilizing emergency department registered nurses to complete the entire medical and forensic examination for rape victims. This occurred in Memphis in 1976 (Speck & Aiken, 1995), Minneapolis in 1977 (Ledray & Chaignot, 1980), and Amarillo in 1979 (Antognoli-Toland, 1985). These programs worked independently until the late 1980's. The Journal of Emergency Nursing assisted in connecting these programs (ENA, 1991) and aided in communication and collaboration. In 1992 the pioneers of sexual assault nurse examiner programs formed the International Association of Forensic Nurses (IAFN) (Ledray & Arndt, 1994; Ledray, 2006).

The Violence Against Women Act (VAWA) in 1994 focused research and education on preventive measures for violence against women. The Act changed laws for

repeat offenders, provided “grants to combat violent crimes against women” (1994, p. 115) and increased education for law enforcement and judicial agents (Ford, Backman, Friend & Meloy, 2002). Standards for practice of sexual assault nurse examiners (IAFN, 1996) and state and national protocols were developed (American College of Emergency Physicians, 1999; Texas Evidence Collection Protocol, 1998; U.S. Department of Justice, 2004). These protocols promoted standardization of care for the sexual assault patient.

The treatment of sexual assault victims has evolved over time. That treatment and collection of forensic evidence is standardized because of national attention and federal funding for education and research. As shown in Table 1, the intent of sexual assault research sometimes differed with judicial outcomes. A vital finding from these research studies was that cases were not dismissed because continuity of possession, or what law enforcement and court officials refer to as “chain of custody.” None of these studies indicated dismissal and it appears reasonable that a standardized approach to all trauma victims is warranted.

Table 1

Sexual Assault Research and Judicial Outcomes

Author	Purpose	Factors Affecting Prosecution
Tintinalli & Hoelzer (1985)	To identify patterns of medical findings in sexual assault; investigate the appropriateness of medical therapy; and determine the impact of the ED examination on the legal process.	No relationship between presence of sperm and victim's trauma with guilty verdicts.
Rambow, Adkinson, Frost & Peterson (1992)	To determine the medical and legal usefulness of protocol for sexual assault victims.	The factor significantly associated with successful prosecution was the presence of trauma.
McGregor, Le, Marion & Wiebe (1999)	To determine the relation between the extent of documented physical injury and a positive legal outcome in cases of sexual assault and to determine other factors associated with the	Physical documentation of victim injury and legal outcomes were significantly associated if the victim knew the assailant

Table 1 (*continued*)

Sexual Assault Research and Judicial Outcomes

DuMont, McGregor, Myhr & Miller (1999)	To determine differences between sexual assaults and legal outcomes reported in 2 major Canadian cities and to ascertain if medicolegal findings of physical injury, and presence of sperm and semen and/or saliva are related to charges being laid and convictions secured in the presence of non-medical factors.	When victims reported the assault, penetration charges were laid compared to non- penetrating assault. If the assailant was known to the victims, charges were laid. Medical findings, such as presence of sperm/semen and documented injury were not associated with legal outcomes.
Gray-Eurom, Seaberg & Wears (2002)	To determine the association between historical and physical evidence with judicial outcome in sexual assault cases.	The victim's age, presence of trauma and the use of a weapon were significantly associated with

Table 1 (*continued*)

Sexual Assault Research and Judicial Outcomes

		successful prosecution.
McGregor, DuMont & Myhr (2002)	To determine whether medical-legal findings are associated with filing of charges and conviction after adjusting for demographic factors and assault characteristics.	The presence of injury and victim cooperation were significantly associated with prosecution.

CHAPTER IV

ROLE IMPLICATIONS FOR NURSES CARING FOR GUNSHOT WOUND VICTIMS

Abstract

Emergency department registered nurses treat victims of violent acts because the emergency department is usually the initial area of treatment. The nursing care of gunshot wound victims not only includes physical, immediate needs but also forensic, anticipated needs. The purpose of this article is to describe three types of gunshot wound forensic evidence and to describe the roles nurses when treating victims of gunshot wounds.

Role Implications for Nurses Caring for Gunshot Wound Victims

As the prevalence of violence and violent crimes increases in our society, healthcare professionals need to be skilled in providing quality care to victims of violence. Healthcare providers, especially emergency department (ED) registered nurses (RNs), frequently care for victims of violence (AACN, 1999; Sekula, 2005) because the emergency department is often the initial location of the care provided to these victims (Fulton & Assid, 2006). The ED RNs' ability to recognize, collect, and preserve physical evidence plays a vital aspect in the investigation of a crime and may even influence the outcome of legal proceedings (Sekula, 2005). Commonly evidence, such as clothing, cartridges, and gunpowder residue, is discarded in the emergency department because a life is at stake and evidence is deemed of little immediate value (Smialek, 1983).

However, it is no longer accepted practice to destroy crucial evidence to save a life (Sekula, 2005); so, nurses must understand and apply forensic methods (Hoyt, 2006). Evidence that is destroyed by healthcare professionals can result in perpetrators of abuse and violence evading prosecution (Hoyt, 2006; Sekula, 2005).

In 2005, the Centers for Disease Control and Prevention reported accidents as the 5th leading cause of death, intentional self-harm (suicide) as the 11th and assault (homicide) as the 15th. The majority of accidents, suicides and homicides were the result of firearm injuries (Kung, H-C, Hoyert, D.L., Xu, J., & Murphy, S.L., 2008). That year, 2.1 million people were treated in U.S. emergency departments for injuries inflicted by violent acts; at least 51,000 people died as a result of violence, and 58% (29,684) of these violent deaths were caused by firearm injuries.

A review of the literature produced numerous guidelines on how to collect and document evidence yet none of these authors gave references related to the frequency or quality of the implementation of their proposed standards (McCracken, 2001; Stevens, 2004; Assid, 2005; Yost & Burke, 2006). Because the emergency department is frequently the initial point of entry of the care provided to victims of violence (Fulton & Assid, 2006), nurses are in a vital role to provide patient care and to collect evidence (Malestic, 1995; Hoyt, 1999). Nurses have several roles during client care. These roles are focused not only on providing care and comfort, but also on emphasizing caring for the client as a whole including forensic issues (Perry, 2009). The purpose of this article is to describe three types of gunshot wound forensic evidence and to describe the roles nurses when treating victims of gunshot wounds.

Types of Gunshot Wound Forensic Evidence

Victims with fatal gunshot wounds (GSW) usually receive some type of medical attention yet evidence that could assist in the reconstruction of the event is often lost, ignored or deemed of little value (Smialek, 1983). Commonly, nurses preserve the bullet involved in gunshot wound cases, yet gun shot residue and clothing are equally important. They, however, are often overlooked.

Bullets

Bullets are the primary type of key forensic evidence present in GSW. An intact bullet or projectile recovered from a GSW victim can reveal the caliber of the bullet (Swanson, et al., 2006; Saferstein, 2009). During the firearm evidence examination of the striations of a bullet, firearms forensic examiners can glean individual characteristics which might ultimately match the bullet to the actual firearm from which it was fired. Thus, although recovering an intact or fragmented bullet may not seem important to emergency department or operating room registered nurses in their life-saving efforts, such evidence is invaluable to law enforcement investigators. In some cases, GSW victims immediately go to the operating room upon arrival at the hospital. If healthcare providers remove any projectiles, the object must be safeguarded against alteration (Wick, 2000; Evans & Stagner, 2003). However, projectiles are removed from the body and often discarded mainly because of lack of education (personal communication Luis Sanchez, MD, Chief Medical Examiner, July 2008). In these situations, medical personnel wreak unintentional havoc for criminal investigations due to the lack of evidence collection (Wick, 2000).

Through collection education and standardized evidence collection protocols between emergency department RNs and law enforcement, properly recovered bullets in GSW cases can lead to increased submissions of such evidence to the National Integrated Ballistics Information Network (NIBIN) and to increased case clearances for law enforcement. The NIBIN is maintained by the Bureau of Alcohol, Tobacco, Firearms, and Explosives and allows firearms analysts to acquire, digitize, and compare markings made by a firearm on bullets and cartridge cases recovered from crime scenes (Saferstein, 2009). Such education and established evidence collection protocols can also serve to inform RNs “as to the irreparable damage that can be wrought by the careless application of forceps or other such instruments in removing the bullet” (Swanson, et al., 2006, p. 128).

Gunpowder and Primer Residue

Gunpowder and primer residues represent a second important and valuable type of forensic GSW evidence. Gunpowder and primer residue aids in determining intent of the incident as “the absence or presence of powder residues might be an important factor in assessing whether a shooting was a criminal homicide or a suicide” (Swanson et. al., 2006, p. 130). Gunpowder residue assists in shaping the distance from which the weapon was fired (DiMaio & Dana, 1998; Geberth, 2006). For example, “a shot fired from six inches with black powder produces burning on the surface (of clothing or skin); a distinctive powder deposit is created at a range of 12 inches; and dispersed grains of powder may be found even when the weapon was fired at a distance of up to three feet” (Swanson, et al., 2006, p.130). Primer residue can also potentially assist in identifying

not only if the individual fired a weapon, but also with which hand the weapon was fired. This evidence is extremely important when investigating if the patient was the shooter or the victim. The simplest way healthcare providers can assist in the preservation of gunpowder and primer residues is by placing paper bags over both hands of the victim and securing the bags with silk tape.

Clothing

Another example of key evidence often overlooked by emergency department personnel is the victim's clothing. Clothing could be used in determining range of fire, entrance and exit wounds, location of wounds and trace evidence, including soot and gunshot powder residue (DiMaio & Dana, 1998; Geberth, 2006). Additionally, the victim's clothing can often provide investigators valuable biological evidence for DNA analysis (Osterberg & Ward, 2007). However, healthcare professionals often cut the clothes off and throw them into trash cans or biohazard collection containers, thus contaminating any evidentiary potential of the clothing (personal communication Michael Bozeman MS, Sergeant (Ret.) Houston Police Department Homicide Division, March 2008). Further, when emergency department personnel do consider preserving clothing for police investigators, they often collect it in plastic hospital bags. These plastic bags are not appropriate for evidence collection as they trap moisture and cause mildewing, which destroys the evidence integrity (Assid, 2005). Evidence needs to be preserved by placing it in paper bags instead of plastic bags.

Nurses' Roles in Caring for Gunshot Wound Victims

Nurses' roles in providing care to gunshot wound victims are closely aligned with those associated with caring for sexual assault victims. The sexual assault nurse examiner (SANE) role is well documented and established (Lynch, 2006). The SANE encompasses several nursing actions and can be categorized into three main nursing roles: clinician, communicator and collaborator. Emergency department registered nurses dealing with gunshot wound victims also function under the same nursing roles; the victim condition is the main difference. During a sexual assault medical forensic examination, the setting is controlled in an individual room with only the victim and the SANE and has standardized steps for collecting evidence and appropriate equipment (LaMonica & Pagliaro, 2006). In contrast, the gunshot wound victim has several healthcare providers in the room rendering life-saving treatments without standardized steps for collecting evidence and inappropriate equipment. While there is an emergent nature to providing care for a sexual assault victim, it tends to be more deliberative and calm than the nature of providing care for a gun shot wound victim.

Clinician

Nurses are primary clinicians and provide holistic care for all patients. The caregiver independently assists the client, in sickness or wellness, in activities contributing to health, to recovery or to a peaceful death (Henderson, 1964). While this broad definition may seem in conflict with what happens for gunshot wound victims, in fact, nurses aid in the consequences of death by preserving evidence that can speak for the victim when they can no longer and that can assist in convicting those who inflicted

the gunshot wound. During these activities the nurse assesses, treats and evaluates the patient's condition. A nurse caring for sexual assault victims and GSW victims should treat current medical problems and address anticipated needs, such as evidence collection and testifying in legal proceedings (Goll-McGee, 1999). The clinician incorporates traditional nursing duties of assessment, treatment and evaluation with forensic duties of evidence collection, maintaining chain of custody for evidence integrity and testifying in legal proceedings. In a pilot study by Eldredge (2008), emergency department and critical care nurses were surveyed about their knowledge of forensic practices. The respondents answered the survey acknowledging forensics as part of their responsibilities. They also acknowledged a need for more education surrounding forensics. The role of clinician is the key role commonly viewed by the public in emergent conditions such as gunshot wounds. But that care is viewed typically as the care of the person not the care of the evidence.

Communicator

The nurse communicates with the client, family members, healthcare team members and the community relaying important client information and keeping all members informed of client changes (Perry, 2009). The SANE communicates with law enforcement after evidence is collected and ready for transport to the crime lab for analysis (O'VAW, 2004). The nurse caring for a GSW victim also will communicate with local law enforcement agencies and if the victim dies, the nurse communicates with the medical examiner/coroner office. According to state law, when a patient sustains a GSW, law enforcement must be notified of the incident. Early contact with law

enforcement agencies allows them to begin their investigation into the incident. HIPPA acknowledges this important communication by exempting it from violation of the HIPPA rules and standards (HHS, 2009a).

The medical examiner/coroner office is notified if the patient dies. Depending on state law, either a medical examiner or coroner will investigate circumstances surrounding the cause and manner of death. The nurse reports the death to the medical examiner/coroner with details surrounding the incident and medical treatment provided to the patient before expiration. The nurse is allowed to share information with agencies investigating the death of a client (HHS, 2009b)

In addition, the nurse must communicate with other healthcare providers when documenting client assessments, treatments and evaluations. Written documentation must be accurate, timely and thorough (Perry, 2009) and as many nurses know, 'if it's not written, it's not done'. The nurse must have meticulous documentation listing the location of injuries, treatments provided to the patient and nursing interventions preserving evidence. When nurses collect and preserve evidence, the nurse must document this intervention and the receiver of the evidence. Written documentation aids in protecting the nurse, evidence for the victim and testimony for legal proceedings (Goll-McGee, 1999).

Collaborator

Not only do the nurses communicate the incident with law enforcement but also nurses bridge the gap between healthcare providers, law enforcement and medical examiner's/coroners offices. Nurses establish an environment for collaborative care

(Perry, 2009). The SANE collaborates with victim advocacy agencies (OVAW, 2004).

When a victim sustains a GSW and is transported to the hospital, there are two crime scenes. The first crime scene is where the incident took place and the second crime scene is the hospital examination room. When nurses collaborate with law enforcement and limit the number of people in the hospital examination room this decreases the amount of evidence transferred from the victim to healthcare providers. Nurses also collaborate with law enforcement when nurses collect evidence, maintain chain of custody and provide the evidence to law enforcement officers that aids in the investigation. In addition to collaborating with law enforcement agencies, nurses collaborate with the medical examiner/coroner office. When nurses collect evidence from the victim, this evidence aids in the investigation of cause and manner of death.

In the following clinical example, clothing evidence was needed yet missing.

Clinical Example

A 27-year-old African-American male sustained a GSW to the chest following a robbery. Emergency medical technicians responded to the secure scene and transported the victim to the hospital with life-saving interventions in progress. The victim was pronounced dead upon arrival to the hospital. The emergency department nurses rendered post-mortem care and placed the body into a white body bag. The victim was transported to the medical examiner office for an autopsy. The forensic pathologist requested to see the victim's clothing to determine the angle and range of fire. The hospital was notified and the nurse's documentation listed clothing available. The clothing was collected from the hospital and transported to the medical examiner office. The forensic pathologist opened

the plastic bag to find a pair of white socks. The forensic pathologist was unable to determine angle and range of fire based on a pair of socks. Additionally a plastic bag traps moisture and causes mildewing.

The nurse also collaborate with law enforcement agencies and medical examiner offices/coroners offices in establishing appropriate hospital policy and procedures. The hospital policy must include educational guidelines for nurses learning forensic techniques. The Emergency Nurses Association (ENA) supports nurses' involvement in establishing guidelines for proper evidence collection techniques (ENA, 2003).

Conclusion

Emergency department registered nurses not only treat the physical and emotional needs of patients, but also forensic issues. Nurses apply the nursing process in combination with forensic science elements during nursing care of trauma victims (IAFN/ANA, 1997). Nurses caring for traumatic gunshot wound victims not only care for immediate needs but also forensic needs. Nurses collect bullets, gunpowder residue and clothing as evidence and incorporate the clinician, communicator and collaborator nursing roles into their practice. Only recently, however, has the view of providing care beyond the existence of life through forensic considerations emerged. These nurses serve many roles that align with those of SANE nurses. Nurses who assume the role of providing care for forensic purposes protect the evidence that links healthcare to criminal justice.

CHAPTER V

DOCUMENTATION OF FORENSIC PHYSICAL EVIDENCE FROM FATAL GUNSHOT WOUND VICTIMS BY REGISTERED NURSES AND ITS ADMISSIBILITY IN LEGAL PROCEEDINGS

Abstract

Documentation of forensic physical evidence from fatal gunshot wound victims by the registered nurse and its admissibility in legal proceedings is the focus of this research study. A retrospective review of four hundred fifty-one medical examiner records were researched focusing on documentation of clothing, cartridges and gunpowder residue preservation. Records reflect that 22.6% of cases (n=102) were wearing some type of clothing, 8.2% of cases (n=37) were not clothed, 36.8% of cases (n=166) was unknown and 32.4% of cases (n=146) there was no documentation. The retrieval of cartridges were 4.7% of cases (n=21) and gunpowder residue preservation was documented on the hospital record in 27.6% of cases (n=66). There were 109 cases (24.2%) with corresponding legal proceedings and there was no evidence collected by the registered nurse admitted into legal proceedings.

Introduction

As healthcare providers in emergency departments focus on saving lives, vital forensic physical evidence from gunshot wound victims may not be collected or may be collected inadequately. A review of the literature produced numerous sources with guidelines on how to collect and document evidence but there are few references related

to the frequency or quality of implementation (McCracken, 2001; Evans & Stagner, 2003; Stevens, 2004; Assid, 2005; Yost & Burke, 2006). Each reference also provides similar guidelines for documenting, collecting and preserving evidence from gunshot wound victims; however, there are no published studies that report the extent to which these guidelines are implemented by practicing RNs.

In 2005, the Centers for Disease Control and Prevention reported firearm accidents, suicides and homicides among the leading fifteen causes of death (Kung, H-C, Hoyert, D.L., Xu, J., & Murphy, S.L., 2008). Despite the large number of victims and the cost, funding for research in forensic evidence collection is not as readily available as it is for other health conditions, such as HIV/AIDS and various cancers (Baroni & Richmond, 2006). The purpose of this study is to discover the percentage of fatal gunshot wound (GSW) forensic physical evidence, specifically clothing, cartridges and gunshot residue preservation, collected in the hospital and documented in the medical examiner record and what evidence was admissible in legal proceedings.

Research Questions

The research questions for the proposed study were as follows:

1. What percentage of fatal gunshot wound forensic physical evidence documented in the medical examiner record from 2004 to 2006 in Harris County was collected by registered nurses?
2. Of the investigations formally filed in a court of law, what percentage of fatal gunshot wound physical forensic evidence collected by the RN as

documented in the medical examiner record from 2004 to 2006 in Harris County was admissible in legal proceedings?

3. Does the hospital trauma level designation and accreditation reflect differences in the amount and type of gunshot wound physical forensic evidence collected by the RN?

Methods

The study is a retrospective, descriptive review of medical examiner case fatal gunshot wound records in Harris County from 2004 to 2006 and corresponding legal proceeding records. The single criterion for inclusion in the study is death occurring in a hospital as the result of a gunshot wound. The medical examiner record consists of hospital records, police reports, investigator and autopsy reports, including photographs and subpoenas. A list of records meeting the criterion was stored on a secure, password protected computer during data entry. All data records are coded to preserve anonymity.

The record review was conducted at the Joseph A. Jachimczyk Forensic Center, Medical Examiner's Office (MEO) in Harris County, Houston, Texas. Prior to the study permission was obtained from the Chief Medical Examiner, the custodian of records. Records revealing legal proceedings were searched and reviewed at the Office of the Harris County District Clerk.

The evidence collection instrument and instructions were developed specifically for this study. The foundations for the instrument were formulated from two sources. The first is the national protocols on sexual assault medical forensic examinations (IAFN, 1996; OAG, 1998; ACEP, 1999; Ledray, 1999; USDOJ OVW, 2004). Although most of

these protocols are over nine years old, they are considered standard protocols in the field. The second foundation is the literature addressing collection of cartridges and gunshot residue evidence (Mittleman, Goldberg & Waksman, 1983; Smialek, 1983; Meserve, 1992). Experts in the field, a forensic pathologist, nurse, and anthropologist and a retired homicide detective, reviewed the instrument for accuracy and consistency.

Clothing is defined as any material that covers the body and can include pants, shirts, socks, and shoes. A cartridge is “made up of four components: (1) a cartridge case, (2) a projectile or projectiles (bullet or slug, wadding, pellets), (3) gunpowder, and (4) a primer” (Chaklos & Kuehner, 2006, p. 336,337). Gunpowder residue (GSR) is burnt gunpowder particles that emerge from the muzzle and halt either on the firearm or any surface close to the firearm, such as skin or clothing (Chaklos & Kuehner, 2006).

The United States Department of Health and Human Services Federal Policy 46.102 defines human subjects “as living individual(s)” (OHRP, 2006); this study involved medical records of deceased individuals. Thus, Institutional Review Board approval was not needed for this study. Further, according to the Texas Government Code, section 552.002, these records are considered public information. Data were analyzed using Statistical Package for Social Services (SPSS) version 17.0 and descriptive statistics will be illustrated.

Results

The records of 481 decedents originally met the inclusion criteria and were reviewed. After review of these records, 30 cases were excluded. Ten of the excluded cases were out-of-hospital deaths and 20 excluded cases were delayed deaths. A delayed

death occurs when an individual is assaulted (in this study, shot) and dies months or years later as a result of the original injury. The delayed death records were excluded because initial injury records were unavailable.

The study sample (n=451) consists of 400 males (88.7%) and 51 females (11.3%) (see Figure 1). The age range is <1 year to 88-years, with a median age of 31.26. Twenty-six percent of the victims are Caucasian (n=119), 37% are Hispanic (n=165), 34% are African-American (n=155) and 3% are Asian (n=12) (see Figure 2). The majority of the victims, (n=376; 83.4%) were treated at a hospital in the Texas Medical Center (TMC) with 16.6% (n=75) treated at a non-TMC hospital. Victims arrived to the hospital by ambulance (n=338; 75.1%), air ambulance (n=87; 19.3%), car (n=16; 3.6%) or were dropped-off at the hospital by unknown means (n=9; 2%). A third of the sample, 32.2% (n=145), were pronounced dead upon arrival to the hospital and 67.8% (n=305) received some medical intervention before being pronounced dead. The manner of death is certified as homicide for 73.4% (n=331), suicide for 25.9% (n=117) and accident for 0.7% (n=3) (see Figure 3).

Hospital Medical Records Evidence Documentation

Clothing

Clothing is any material that covers the body and can include pants, shirts, socks, and shoes. The hospital record reflected that 22.6% of cases (n=102) were wearing some type of clothing and 8.2% of cases (n=37) were not clothed. The clothing state was unknown for 36.8% of cases (n=166) and clothing was not documented for 32.4% of cases (n=146). When documented the most common type of clothing was outer pants

(72.1%; n=62), shoes (64.4%; n=56), socks (38.4%; n=33), shirt (36%; n=31), undergarments (36%; n=31), belt (25.6%; n=22), and valuables (25.5%; n=24). Data were coded as unknown when the hospital record documented that clothing was present on the victim but did not detail what type of clothing was present. RNs documented that clothing was cut in 16.2% of cases (n=73). The clothing was cut by pre-hospital personnel or during emergency department treatment.

Cartridges

A cartridge is “made up of four components: (1) a cartridge case, (2) a projectile or projectiles (bullet or slug, wadding, pellets), (3) gunpowder, and (4) a primer” (Chaklos & Kuehner, 2006, p. 336,337). The hospital record reflects cartridges collected in 4.7% of cases (n=21). Cartridges were collected in the operating room in 90.5% of cases (n=19) and in the emergency room in 9.5% of cases (n=2). The registered nurse documented cartridge retrieval in 90.5% of cases (n=19) and the medical doctor in 9.5% of cases (n=2). The cartridge was documented as being preserved in a urine specimen cup in one case. The agency receiving the cartridge was the police department (19%; n=4), medical examiner (9.5%; n=2), hospital pathology (4.8%; n=1), hospital security (47.6; n=10) and unknown recipient (19%; n=4).

Gunpowder Residue Preservation

Gunpowder residue (GSR) is burnt gunpowder particles that emerge from the muzzle and halt either on the firearm or any surface close to the firearm, such as skin or clothing (Chaklos & Kuehner, 2006). Particles are often deposited on the hands. These GSR particles are preserved by placing paper bags over the victim’s hands. This

procedure was performed in 53% of cases (n=239) and documented on the hospital record in 27.6% of cases (n=66). The procedure was not documented in 47% of cases (n=212). The RN documented performance of the procedure in 97% of cases (n=64) and documented that a police officer performed the procedure in 3% of cases (n=2).

Medical Examiner Records Evidence Documentation

Once a victim is pronounced dead at the hospital the body is placed in a plastic body bag and transported to the hospital morgue, typically without further post-mortem care in order to preserve evidence. The body is transported from the hospital morgue to the medical examiner office without any body manipulation. According to the Harris County Medical Examiner's Office policy, a photograph is taken of the body once it arrives to the office. Healthcare providers did not remove medical interventions post-mortem 99.6% of cases (n=449) allowing medical examiner's to document medical interventions prior to death.

Clothing

The medical examiner record reflected clothing arriving to the office in 41.9% of cases (n=189). The decedent was fully dressed (8%; n=36), partially dressed (17.7%; n=80), unclothed (55.5%; n=267) or in a hospital gown (15.1%; n=68). When the decedent was fully or partially dressed it was considered appropriately preserved in 50.3% of cases (n=95) and inappropriately preserved in 49.7% of cases (n=94). Clothing was placed in paper bags (2.7%; n=13), plastic bag (9.1%; n=44), left in the body bag (10.4%; n=50) and left on the body (17%; n=82).

Cartridges

The medical examiner record reflected 0.9% of cases (n=4) cartridges arriving to the office. Twenty-five percent of cases (n=1) cartridges arriving to the medical examiner office was preserved appropriately compared to 75% of cases preserved inappropriately.

Gunpowder Residue Preservation

There were bags on both hands 98.6% of cases (n=217), only the left hand (0.9%; n=2) and only the right hand (0.5%; n=1). Paper bags were placed 97.3% of cases (n=214) and plastic bags 2.7% of cases (n=6).

Legal Proceedings

As of December 2008, 24.2% of cases (n=109) had related legal proceedings. A full trial was adjudicated in 71.4% of cases (n=56), a guilty plea (26.6%; n=29), an acquittal (6.4%; n=7), a dismissal (3.7%; n=4), active case 3.7% (n=4), individuals out on bond 2.8% (n=3) and no information (5.5%; n=6) (see Figure 4). Out of the 56 full trial cases, 36.7% (n=40) went on appeal and 27.5% (n=30) transcripts were available to review. The transcripts that were unavailable because the cases were in post trial 15% of cases (n=6) or currently checked out 10% of cases (n=4).

The district court house included Harris County 94.3% of cases (n=103), Brazoria County (0.9%; n=1), Fort Bend County (3.7%; n=4) and Montgomery County (0.9%; n=1). The type of evidence admitted in the proceedings were pictures of clothing collected by the medical examiner 27.3% of cases (n=6), pictures of cartridges collected by the medical examiner 50% of cases (n=11), pictures of clothing collected by the police

department 13.6% of cases (n=3) and pictures collected by the medical examiner and police department 9.1% of cases (n=2). There was no evidence collected by the registered nurse admitted into legal proceedings.

Hospital Trauma Level and Accreditation

In Houston and surrounding Harris County hospitals, there are only two level 1 trauma centers and both are located in the Texas Medical Center. Three hundred seventy-three records (72.7%) were reviewed from level 1 trauma centers and 78 records (17.3%) were from non-level 1 trauma centers. There were no major differences noted in collection and documentation of forensic evidence.

Limitations

One limitation of record review is incomplete records (Polit & Beck, 2004). Hospital documentation methods change regularly and differ from institutions. With the differing documentation methods, information was not in one central location on the medical record. Legal proceeding documentation is only available in appeal cases, not original legal proceedings. Lastly, few homicide records entered legal proceedings.

Discussion

This original research study begins discussion on implementation of forensic nursing practices through a review of evidence collection by hospital nurses from victims of fatal gunshot wounds. This study is the first to attempt an explanation of the quality of such evidence collected and documented in the medical examiner record. Documentation of nursing interventions is an essential duty of the nurse (Maxwell, 2009). The record reflects nursing actions and patient conditions and is crucial to be thorough and complete.

In the hospital record, 32.4% of cases (n=146) had no documentation of clothing. The placement of paper bags on the decedent's hands to preserve gunpowder residue was not documented in 47% of cases (n=212) but performed in 53% of cases (n=239). The retrieval of cartridges were documented in the medical record however in 19% of cases (n=4) it is unknown the location of the cartridge after retrieval.

The setting of this research study is ideal because according to the Texas Code of Criminal Procedure, article 49.25, any unnatural death must be investigated by a medical examiner. Further, the Harris County Medical Examiner's Office policies state that when the decedent arrives to the office, photographs are taken of the decedent's appearance. The decedent has not been altered during transport to the medical examiner office from the local hospital and illustrates any medical interventions or treatments rendered prior to death.

Clothing

The medical examiner check-in photographs illustrate inconsistency in evidence collection for gunshot wound deaths in the hospital setting. Many decedents were photographed with clothes bundled together in the body bag or in a plastic bag, allowing for transfer of evidence. Forty-four records (23.3%) reflect clothing placed in plastic bags, allowing moisture to be trapped, resulting in mildewing and destruction of evidence integrity (Assid, 2005).

Clothing is documented as cut-off the victim 16.2% of cases (n=73), however it is not noted where the clothing was placed after being removed. Ten records reflect clothing was cut and discarded because of being soiled by blood and body fluids. This

finding illustrates the lack of forensic training provided to pre-hospital personnel and the resulting destruction of vital evidence on clothing. The main piece of clothing missing was the shirt. The shirt is the first piece of clothing removed to render life-saving interventions and is the first piece of evidence discarded. The shirt aids in many aspects of the investigation, range of fire, evidence of soot or gunpowder residue.

The hospital records reviewed in this study represent 35 hospitals. Each hospital uses a different documentation method, including either paper or computer charting. There is a variety in evidence documentation; one hospital uses a computerized drop-down method to select nursing interventions specific to evidence collection compared to a documentation method with a check-mark option for evidence collection. One level one trauma hospital has a role of 'clothing clerk' to collect any clothing or valuables on the patient. In the current study, 32.7% of cases (n=54) reflects the clothing clerk option selected, yet no additional information is available in the record. When the 'clothing clerk' collects the clothing and valuables, the end result is not documented.

Cartridges

The majority of the 4.7% of cases (n=21), cartridges retrieved by hospital personnel were retrieved during exploratory laparotomy abdominal procedures. However, 45.5% of cases (n=219) were intracranial injuries and the decedent did not receive surgical intervention to remove the cartridge. Not all GSW victims will have a cartridge with or in them because of exit wounds and loss in transport; therefore the cartridge retrieval percentage may be artificially low.

One physician was able to remove a cartridge from a superficial leg injury and placed the cartridge in a plastic bag taped to the decedent's leg for transport to the medical examiner office. The cartridge was not preserved appropriately to ensure the integrity of the evidence; the cartridge was placed in a plastic bag, did not have a patient identifier and chain of custody documentation was not maintained.

Gunpowder Residue Preservation

There are inconsistencies with gunpowder residue preservation when comparing the hospital record to the medical examiner record. The hospital records reflect 239 cases where paper bags were applied to the victim's hands, yet upon arrival to the medical examiner office, only 222 records document paper bags on the hands. It is unknown at what point the paper bags were removed during medical treatment. One hospital record documents that the RN contacted the investigating agency and asked permission to remove the bags. Permission to remove the bags was granted in this case.

Legal Proceedings

Even though no evidence collected by the registered nurse was admissible in legal proceedings for the cases reviewed, the judge at one trial allowed admission of clothing pictures collected at the medical examiner office to illustrate the type of injuries to the jury. The picture was available only because hospital personnel provided clothing to the medical examiner.

Implications for Future Research

Additional research needs completion in different cities and medicolegal agencies (justice of the peace, medical examiner's or coroners records). This research was

conducted in Harris County, Houston, TX, the third largest county in the U.S. (U.S. Census, 2008) and home to the Texas Medical Center. Because of this population, there will be different findings from other agencies. The instrument developed for this study needs additional testing. The instrument was able to obtain descriptive information needed to answer the research questions. The instrument needs to be tested in different medicolegal agencies and hospitals.

The decedent was partially dressed 17.7% (n=80) arriving to the medical examiner office. In most cases the shirt was cut in the middle, revealing the chest wall, and left on the body. When the body was log-rolled, the shirt was tucked underneath the body soaked in blood and bodily fluids. Research needs conducting on the best method of clothing preservation when clothes are left on the body.

Implications for Clinical Forensic Practice

These research findings echo Eldredge (2008) pilot study findings for the need of additional educational opportunities to learn forensic techniques. As stated in the beginning of the article, there are numerous publications listing how to collect evidence, but these important publications need to be available to nurses actively involved in treating forensic patients. Also, the development of hospital policies and protocols need establishment. In the current study, hospital policies and protocols were not reviewed in comparison to the records.

These research findings aid in understanding current nursing practices allowing policies in order to develop interventions to ensure gunshot wound evidence is collected properly and preserved. The RN has several roles and responsibilities during patient

care. This additional responsibility should be automatic instead of an added duty. When the RN is an active participant in gunshot wound evidence, the RN can speak for patients when patients can no longer speak for themselves

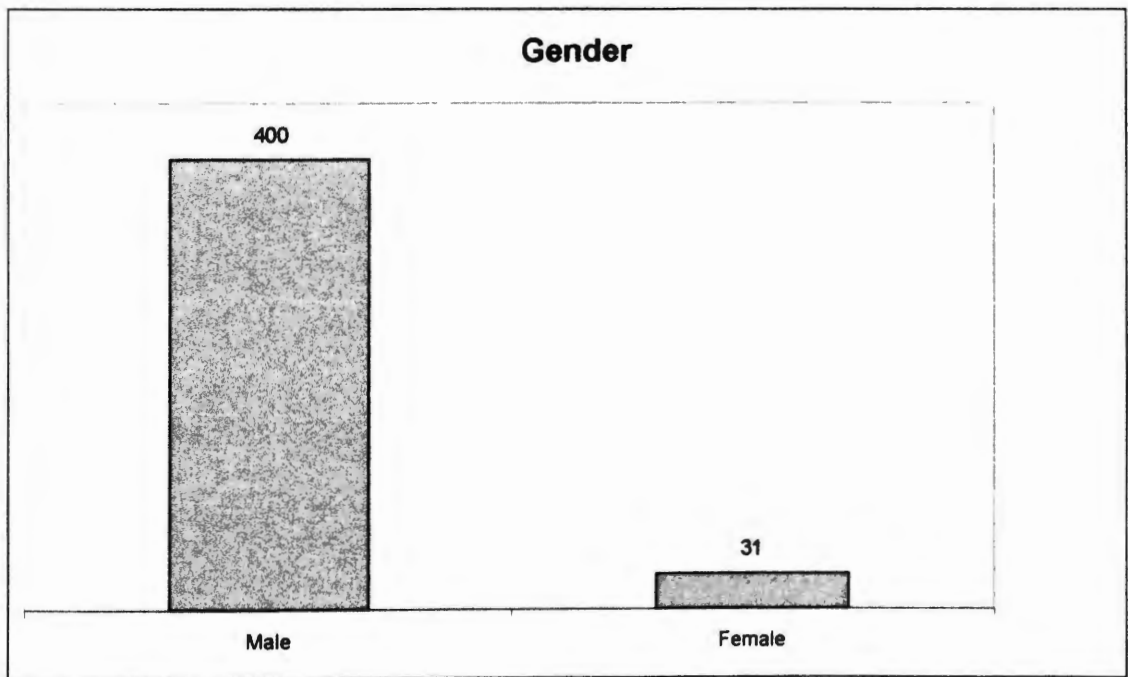


Figure 1. Gender

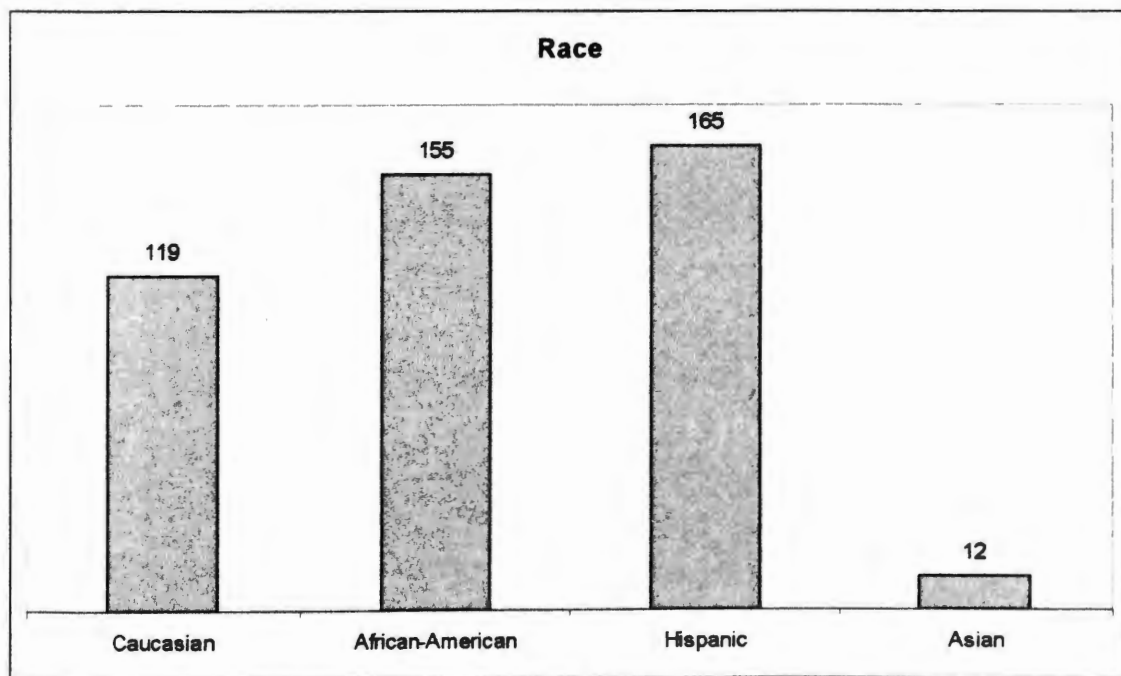


Figure 2. Race

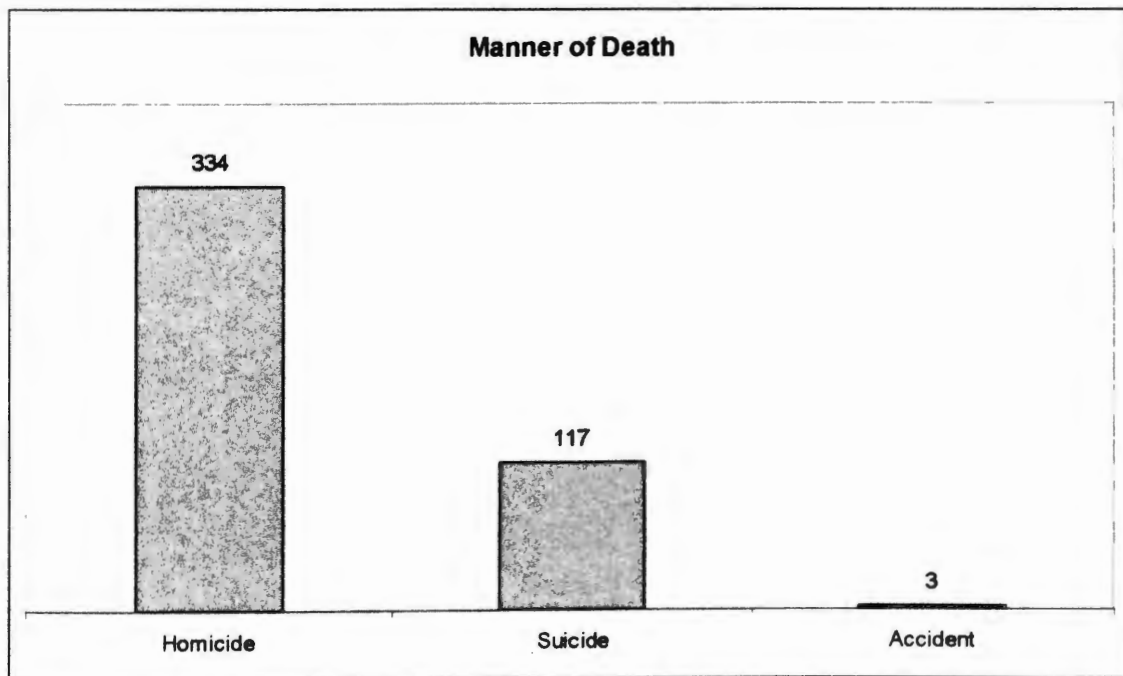


Figure 3. Manner of Death

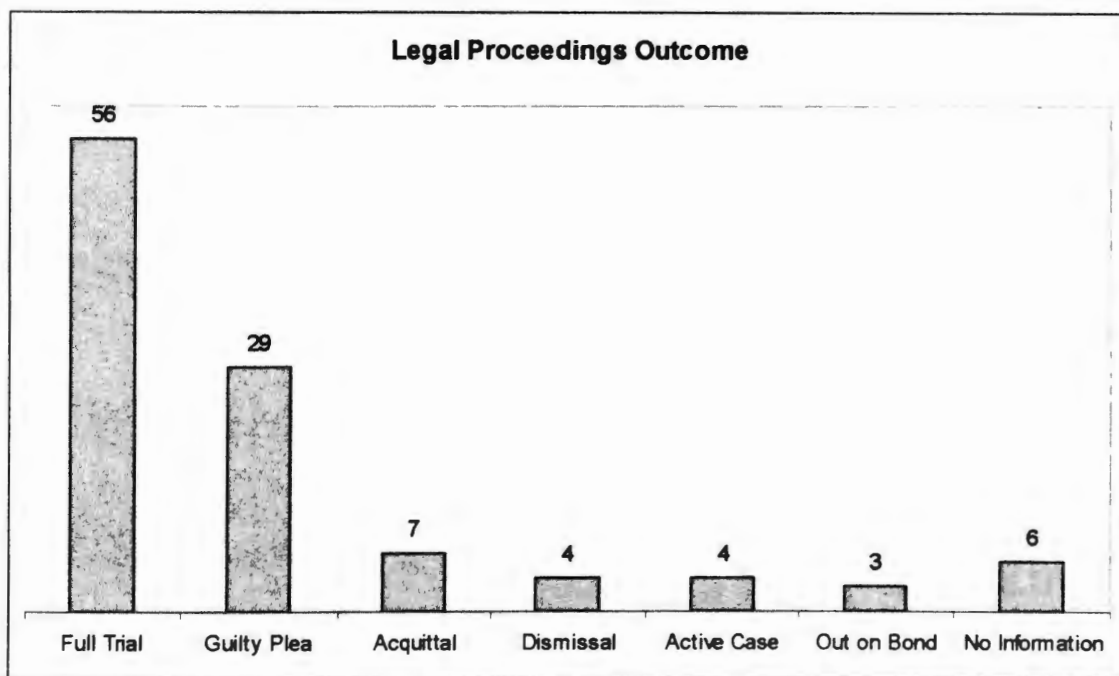


Figure 4. Legal Proceedings Outcome

CHAPTER VI

SUMMARY OF THE STUDY

Registered nurses are the primary caregivers in emergency departments. These nurses care for victims of violence vigilantly and thoroughly. Registered nurses advocated for sexual assault victims leading to federal funding, research and standardized care. Now, gunshot wound victims need the same advocacy. There are several publications surrounding care for GSW victims yet there was no scientific research on how these publications are implemented at the bedside. In the current study, 22.6% of cases (n=102) documented clothing in the hospital record, 4.7% of cases (n=21) documented cartridge retrieval and 27.6% of cases (n=66) documented gunpowder residue preserved, see table 2 for study research questions, answers and recommendations for future nursing practice. These results are low comparing the amount of literature available on treating these clients.

This study is the beginning of a new area for research by nurses. As such, this initial study should be replicated in many other geographic areas of the state for comparison purposes. It should also be replicated in other states, with appropriate acknowledgement for any variance in legal considerations. The published literature was used as a foundation for the instrument for this study. This literature should be used as a foundation for hospital policies and procedures, such as that found in appendix E. This research study serves as a foundation for future research, policy development and

standardized patient care for the gunshot wound victim. Utilizing the sexual assault progress offers a solid basis for standardizing practice for gunshot wound victims.

Table 2

Study Research Questions, Answers and Recommendations for Future Nursing Practice and Research

Research Question	Source of Data	Answer to Research Question	Recommendations for Future Nursing Practice and Research
1. What percentage of fatal gunshot wound physical forensic evidence documented in the medical examiner record from 2004-2006 in Harris County was collected by registered nurses?	Medical Examiner Record	Clothing: 22.6% of cases documented clothing in the hospital record Cartridges: 4.7% of cases documented cartridge retrieval Gunpowder residue: 27.6% of cases documented gunpowder residue preserved in the hospital record.	1. Teach forensic techniques and evaluation skills in undergraduate and graduate nursing programs. 2. Review hospital documentation procedures and forms currently in use and revise to reflect direct patient care; collect useful consistent information and data that may be used in a court of law. 3. Incorporate research findings into agency orientation programs for nurses caring for gunshot wound patients. 4. Extend study to include state and national data.

Table 2 (continued)

Study Research Questions, Answers and Recommendations for Future Nursing Practice and Research

2. Of the investigations formally filed in a court of law, what percentage of fatal gunshot wound physical forensic evidence collected by the registered nurse in the medical examiner record from 2004-2006 in Harris County was admissible in legal proceedings?	Legal proceeding appeal cases	Zero percent of evidence (clothing, cartridges, gunpowder residue) collected by the registered nurse was admissible in legal proceedings	1. Teach forensic techniques and their relationship to legal and judicial processes. 2. Design a prospective study to examine the impact of evidence collection by the nurse on legal outcomes.
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Table 2 (continued)

Study Research Questions, Answers and Recommendations for Future Nursing Practice and Research

3. What policy and practice implications can be derived from the evidence related to the registered nurse role as found in research questions 1 and 2?	Analysis of data collected in research questions 1 and 2.	Roles identified: Clinician, Communicator, Collaborator Policy implications align with ENAs forensic evidence collection position statement. Practice implications include training and evaluation of practice.	1. Develop a universally accepted, evidence-based procedure that ultimately becomes the standard of care, similar to the SANE protocol. 2. Test proposed policies and protocols to determine the effect on outcomes.
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Table 2 (continued)

Study Research Questions, Answers and Recommendations for Future Nursing Practice and Research

4. What are the similarities and differences of these roles when compared to the standardized Sexual Assault Nurse Examiner (SANE) protocol?	Analysis of data collected in research questions 1 and 2.	Roles are similar: Clinician, Communicator and Collaborator. Main difference is the victim condition and setting of evidence collection.	1. Data can be incorporated into lectures about forensic techniques for nursing students and practicing nurses. 2. Additional qualitative investigation of the role of the nurse will be necessary to validate the findings of the current study.
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Table 2 (*continued*)

Study Research Questions, Answers and Recommendations for Future Nursing Practice and Research

5. Does the hospital trauma level designation and accreditation reflect differences in the amount and type of gunshot wound physical forensic evidence collected by the RN?	Analysis of data collected in research questions	No comparative differences noted in documentation and preservation of physical forensic evidence from gunshot wound victims medical examiner records.	1. Study results confirm the feasibility of standardized application of a policy at all settings providing care to gunshot wound victims. 2. Further quantitative evaluation of nation-wide data is needed to improve the generalizability of these findings.
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APPENDIX A
Human Subjects Review

TEXAS WOMAN'S UNIVERSITY
DENTON DALLAS HOUSTON

INSTITUTIONAL REVIEW BOARD

6700 Fannin St., Houston, Texas 77030 713/794-2480

May 22, 2008

Ms. Angela Snow
19538 Shady Bank Drive
Tomball, TX 77375

Re: "The Role of the Registered Nurse in collecting and documenting Physical Forensic Evidence Related to Fatal Gunshot Wounds: Recommendations for Policy and Practice"

Previously entitled: "Documentation and Admissibility of Fatal Gunshot Wound Physical Forensic Evidence Collected by Registered Nurse: Recommendations for Policy and Practice"

Dear Ms. Snow:

In response to your email regarding IRB Procedure for the abovementioned study, it has been determined that this study should not be reviewed by the IRB at all.

Please read the reason for this decision: Based on the guidelines, we don't believe this study should be reviewed at all by the IRB because by definition this research does not involve human participants as defined on page 7 of TWU Guidelines:

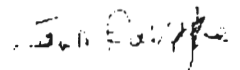
2. Human Participants in Research

Human participants in research are living individuals about whom investigators (whether professionals or students) conducting research obtain (1) data through intervention or interaction with individuals, or (2) identifiable private information. Identifiable private information includes any acquired information via self-report, behavior, or observation in which the identity of research participants is or may readily be ascertained by the investigators or be associated with the information.

This definition came straight from the Code of Federal Regulations so we feel that it does not even require an exempt application; the study doesn't involve human participants.

Please feel free to contact us if you need any additional information.

Thank you,



Dr. John Radcliffe
IRB Chair

APPENDIX B
Agency Approval

Luis A. Sanchez, M.D.
Chief Medical Examiner



(713) 798-9292
FAX : (713) 798-6844

JOSEPH A. JACHIMCZYK FORENSIC CENTER

May 20, 2008

Texas Woman's University
Institute of Health Science – Houston Center
ATTN: Institutional Review Board
6700 Fannin
Houston, Texas 77030

To Whom It May Concern:

This serves as a letter of support for Angela Snow, MSN, RN, a Texas Woman's University doctoral nursing student, to conduct her pilot study titled *The role of the registered nurse in collecting and documenting physical forensic evidence related to fatal gunshot wounds: Recommendations for policy and practice* and subsequent work at the Harris County Medical Examiner's Office.

I am the Chief Medical Examiner and custodian of records for the office. According to the Texas Code of Criminal Procedure Chapter 49.25, Section 11:

Records

The medical examiner shall keep full and complete records properly indexed, giving the name if known of every person whose death is investigated, the place where the body was found, the date, the cause and manner of death, and shall issue a death certificate. The full report and detailed findings of the autopsy, if any, shall be a part of the record. Copies of all records shall promptly be delivered to the proper district, county, or criminal district attorney in any case where further investigation is advisable. The records are subject to required public disclosure in accordance with Chapter 552, Government Code, except that a photograph or x-ray of a body taken during an autopsy is excepted from required public disclosure in accordance with Chapter 552, Government Code, but is subject to disclosure:

- (1) under a subpoena or authority of other law; or
- (2) if the photograph or x-ray is of the body of a person who died while in the custody of law enforcement (p.28).

According to the Government Code, Chapter 552, Section 552.002:

Definition of Public Information: Media Containing Public Information

(a) In this chapter, "public information" means information that is collected, assembled, or maintained under a law or ordinance or in connection with the transaction of official business:

- (1) by a governmental body; or
- (2) for a governmental body and the governmental body owns the information or has a right of access to it.

(b) The media on which public information is recorded include:

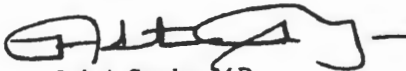
- (1) paper;
- (2) film;
- (3) a magnetic, optical, or solid state device that can store an electronic signal;
- (4) tape;
- (5) Mylar;
- (6) linen;
- (7) silk; and
- (8) vellum.

(c) The general forms in which the media containing public information exist include a book, paper, letter, document, printout, photograph, film, tape, microfiche, microfilm, photostat, sound recording, map, and drawing and a voice, data, or video representation held in computer memory (p. 1-2).

I grant Ms. Snow access to Harris County Medical Examiner case records as permitted by statute. Ms. Snow will be assigned a liaison who will arrange dates and times for her review of Harris County Medical Examiner records for her proposed study.

If you have any questions, please contact me.

Sincerely,



Luis A. Sanchez, M.D.
Chief Medical Examiner

AFS/SMD/dkw

APPENDIX C

Instructions for Completing Instrument: Evidence Collection in the Hospital

Instructions for Completing the Evidence Collection Instrument ©

I. Demographic Information:

1. **Reference number:** sequential number assigned to record reviewed, start with 001
2. **Data collection date:** date of data collection (mm/dd/yyyy)
3. **Date of birth:** reported on death certificate section 5, numerical value (mm/dd/yyyy)
 - a. **Age**
4. **Sex:** reported on death certificate section 2, (Code 1 = male, 2 = female)
5. **Race:** reported on death certificate section 8
 - a. Caucasian = Code 1
 - b. Hispanic = Code 2
 - c. African-American = Code 3
 - d. Asian = Code 4
 - e. Other = Code 5
6. **Date of death:** reported on death certificate section 3 (mm/dd/yyyy)
7. **Time of death:** reported on death certificate section 33 (military time)
8. **Date of injury:** reported on death certificate section 41a (mm/dd/yyyy)
9. **Time of injury:** reported on death certificate section 41b (military time)
10. **Setting of death:** reported in medical record: final progress note, emergency department physician notes, or nursing notes, (Code 1 = ER, 2 = OR, 3 = ICU, 4 = General Floor)

II. Hospital Information:

11. **Hospital:** reported on death certificate section 21 (Code 1 = TMC, 2 = Non-TMC)
 - a. TMC = Texas Medical Center, including the following institutions: (as identified by the Texas Medical Center Corporation)
 1. Ben Taub General Hospital
 2. The Houston Hospice and Palliative Care Systems
 3. Memorial Hermann-Texas Medical Center
 4. Children's Memorial Hermann Hospital
 5. The Methodist Hospital
 6. St. Luke's Episcopal Hospital
 7. Shriners Hospital for Children – Houston
 8. Texas Children's Hospital
 9. TIRR (The Institute for Rehabilitation and Research)
 10. The University of Texas M.D. Anderson Cancer Center

11. Michael E. DeBakey Veterans Affairs Medical Center in Houston
 - b. Non-TMC = institutions outside the Texas Medical Center and within Harris County Houston, TX (Code: according to hospital and number before)
 12. Memorial Hermann Northwest
 13. Memorial Hermann Southwest
 14. Memorial Hermann Southeast
 15. Memorial Hermann The Woodlands
 16. Memorial Hermann Northeast
 17. Methodist Willowbrook
 18. Methodist San Jacinto
 19. Houston Northwest Medical Center
 20. Cy-Fair Hospital
 21. Tomball Regional Hospital
 22. LBJ
 23. Matagorda Hospital
 24. Fort Bend Hospital
 25. Bay Shore Hospital
 26. West Houston Medical Center
 27. Memorial Medical Center, Livingston, TX
 28. St. Catherine's Hospital
 29. St. John's Hospital
 30. Clear Lake Regional Hospital
 31. St. Joseph's Hospital
 32. East Houston Medical Center
 33. Trinity Hospital
 34. Brazosport Hospital
 - c. List what hospital the record is from in the 3rd box with the correct roman numeral
12. **Arrival time to ER:** reported on demographic sheet, face sheet, or patient registration (military time)
 13. **Method of arrival to ER:** reported on ER triage sheet (Code: 1 = Car, 2 = Drop-off [also includes pushing someone out of a car], 3 = Walk-in, 4 = Life Flight, 5 = Police Agency, 6 = EMS, 7 = Transfer from other hospital (list hospital), 0 = Unknown [not listed on record], 8 = other)
 14. **Pronounced dead upon arrival to ER:** reported on emergency department physician notes (discharge section) or emergency department nursing notes (Code 1 = Yes [no medical interventions], 2 = No [medical interventions >1 minute])

- 15. Discharged from ER to:** reported on emergency department physician notes under discharge section (Code 1 = OR, 2 = ICU, 3 = General Floor, 4 = Morgue, 5 = Another hospital)

III. Evidence Collection in Hospital (ER&OR) – Cartridge/Shotshells

- 16. Cartridge retrieval (including bullet, slug, wadding, pellet):** A cartridge is “made up of four components: 1) a cartridge case, 2) a projectile or projectiles (bullet or slug, wadding, pellets), 3) gunpowder, and 4) a primer” (Chaklos & Kuehner, 2006, p. 336,337). A bullet is part of the cartridge and is “the projectile propelled down the barrel of the gun toward the target” (McDonough, 2006, p. 465). Shotshells are “similar to cartridges except that they typically hold numerous projectiles and are described by their gauge, rather than their caliber. Shotshells can also hold a single projectile known as a ‘slug.’ In addition, shotshells contain wadding, which is a plastic or cardboard component or number of components that hold the shot pellets in place and separate them from the powder (Chaklos & Kuehner, 2006, p. 337).
- a. Reported on the ‘foreign bodies sheet’, operating room nursing notes as metal fragment or Operating room nursing notes
(Code 1 = Yes, 2 = No)
 - i. If yes, complete entire survey, if no skip IV

IV. Detailed Evidence Collection in Hospital (ER&OR) – Cartridge/Shotshells

- 17. List number of cartridges:** Reported on the ‘foreign bodies sheet’, operating room nursing notes as metal fragment or Operating room nursing notes (list number)
- 18. Cartridge retrieved in (location):**
- a. Operating room physician procedure or nursing notes
 - b. Emergency department nursing notes
(Code 1 = OR, 2 = ER)
- 19. Cartridge retrieval documented on medical record:**
- a. Operating room nursing notes
 - b. Emergency department nursing notes
(Code 1 = Yes, 2 = No)
 - i. Skip Question 20 if No
- 20. Cartridge retrieval documented by healthcare provider:**
- a. Operating room physician procedure or nursing notes
 - b. Emergency department nursing notes
(Code 1 = RN, 2 = MD, 99 = Unknown [not documented])

21. Pictures of cartridges documented on medical record:

- a. Operating room nursing notes
- b. Emergency department nursing notes

(Code: 1 = Yes, 2 = No)

22. Cartridge preserved documented on medical record:

- a. Operating room physician procedure or nursing notes
- b. Emergency department nursing notes

(Code: 1 = Yes, 2 = No)

- i. Skip Question 23-25 if No

23. Cartridge preserved in as documented on medical record:

- a. Operating room nursing notes
- b. Emergency department nursing notes

(Code: a. Urine specimen cup 1 = Yes, 2 = No; b. Paper bag 1 = Yes, 2 = No; c. Envelope 1 = Yes, 2 = No)

24. Procedure preserved documentation (procedural):

- b. Operating room nursing notes
- c. Emergency department nursing notes

(Code: a. Taped 1 = Yes, 2 = No; b. Stapled 1 = Yes, 2 = No; c. Initialed 1 = Yes, 2 = No; d. Date 1 = Yes, 2 = No; e. Time 1 = Yes, 2 = No; f. Pt Name 1 = Yes, 2 = No; g. Pt Identifier 1 = Yes, 2 = No)

25. Where preserved:

- a. Operating room nursing notes
- b. Emergency department nursing notes
- c. Police Report (narrative section)

(Code: 1 = locked under supervision, 99 = unknown [not documented])

26. Cartridge preservation documented (did healthcare document where cartridge was placed):

- a. Operating room nursing notes
- b. Emergency department nursing notes

(Code: 1 = Yes, 2 = No)

- i. Skip Q 27 if no

27. Cartridge preservation documented by healthcare provider (did healthcare document where cartridge was placed):

- a. Operating room nursing notes
- b. Emergency department nursing notes

(Code: 1 = RN, 2 = MD, 99 = unknown [not documented])

28. Cartridge chain of custody documented on medical record:

- a. Operating room nursing notes
- b. Emergency department nursing notes

(Code: 1 = Yes, 2 = No, 99 = unknown [not documented])

Skip Q 29-30 if no

29. Agency receiving cartridge:

- a. Operating room nursing notes
- b. Emergency department nursing notes
- c. Police Report (narrative section)

(Code: 1 =PD [police department], 2 = ME [medical examiner], 3 = hospital pathology, 4 = hospital security, 99 = Unknown [not documented])

V. Evidence Collection in Hospital (ER&OR) – Clothing

30. Decedent clothed upon arrival to hospital: reported on

- a. cardiopulmonary resuscitation record,
- b. disclosure & consent post mortem procedure record or
- c. emergency department nursing notes
- d. clothing clerk documentation

(Code: 1 =Yes [pt was clothed], 2 = No [pt was not clothed], 0 = [not documented], 99 [unknown, choose option 99 if clothing clerk/valuables; left with pt/left on body/left in pt custody, valuables: inventory done; evidence collection; no chart; clothing taken by police department; given to family; placed in lock box option was marked on nursing notes but no additional documentation is available]

- i. If yes complete entire survey, if no skip VI

VI. Detailed Evidence Collection in Hospital (ER&OR) – Clothing

31. Clothing cut (pre-hospital) documented on ER record:

- a. Emergency department nursing notes
- b. Operating room nursing notes

(Code: 1 =Yes, 2 = No)

32. Clothing documented on

- a. EMS report (Run-Sheet)

(Code: 1 =Yes, 2 = No)

- b. OR record

(Code: 1 =Yes, 2 = No)

33. Clothing retrieved documented on medical record:

- a. Operating room nursing notes
- b. Emergency department nursing notes

(Code: 1 =Yes, 2 = No, 3 = Did not remove, 4 = clothing cut off)

- i. Skip Q 34-35 if No

- ii. Skip Q 34-35 if did not remove or clothing cut off

34. Clothing retrieval in (location):

- a. Operating room nursing notes
- b. Emergency department nursing notes

(Code: 1 =OR, 2 = ER, 0 = Unknown [not documented])

35. Clothing retrieval documented by healthcare provider:

- a. Operating room nursing notes
 - b. Emergency department nursing notes
- (Code: 1 =RN, 2 = MD, 3 = Other, 99 = Unknown)

36. Pictures of clothing documented on medical record:

- a. Operating room nursing notes
 - b. Emergency department nursing notes
- (Code: 1 =Yes, 2 = No)

37. Clothing preservation documented (did healthcare document where clothing was placed):

- a. Operating room nursing notes
 - b. Emergency department nursing notes
- (Code: 1 =Yes, 2 = No)
- i. Skip Q 38-42 if No

38. Clothing preservation documented by healthcare provider (what healthcare provider documented where clothing was placed):

- a. Operating room nursing notes
 - b. Emergency department nursing notes
- (Code: 1 =RN, 2 = MD, 3 = Other, 99 = unknown [not documented])

39. Type of clothing documented on medical record:

- a. Operating room nursing notes
 - b. Emergency department nursing notes
- (Code: a. shirt 1 =Yes, 2 = No; b. outer pants 1 =Yes, 2 = No; c. shoes 1 =Yes, 2 = No; d. socks 1 =Yes, 2 = No; e. undergarments 1 =Yes, 2 = No; f. belt 1 =Yes, 2 = No; g. wallet 1 =Yes, 2 = No; h. dress/skirt 1 =Yes, 2 = No; i. head covering 1 =Yes, 2 = No; j. valuables 1 =Yes, 2 = No; k. Other)

40. Clothing preserved in as documented on medical record:

- a. Operating room nursing notes
 - b. Emergency department nursing notes
- (Code: 1 =paper bag, 2 = plastic bag, 3 = none [not listed])

41. Procedure preserved documentation (procedural)

- b. Operating room nursing notes
 - c. Emergency department nursing notes
- (Code. a. Taped 1 =Yes, 2 = No; b. Stapled 1 =Yes, 2 = No; c. Initialed 1 =Yes, 2 = No; d. Date 1 =Yes, 2 = No; e. Time 1 =Yes, 2 = No; f. Pt. Name 1 =Yes, 2 = No; g. Pt. Identifier 1 =Yes, 2 = No)

42. Where preserved:

- a. Operating room nursing notes
 - b. Emergency department nursing notes
 - c. Police Report (narrative section)
- (Code: 1 =locked under supervision, 2 = left on body, 99 = unknown [not documented])

43. Clothing chain of custody documented on medical record:

- a. Operating room nursing notes
- b. Emergency department nursing notes

(Code: 1 =Yes, 2 = No)

- i. Skip Q 45 if No

44. Clothing chain of custody documented by healthcare provider:

- a. Operating room nursing notes
- b. Emergency department nursing notes

(Code: 1 =RN, 2 = MD, 99 = unknown [not documented])

45. Agency receiving clothing:

- a. Operating room nursing notes
- b. Emergency department nursing notes
- c. Police Report (movable evidence section)

(Code: 1 =PD [police department], 2 = ME [medical examiner], 3 = family member, 4 = hospital security, 99 = Unknown [not documented])

VII. Evidence Collection in Hospital (ER&OR) – Gunpowder residue

46. Paper bags placed on decedent hands: “If there is any indication that gunshot residues may soil the hands...then each hand should be enclosed in a small paper bag. Place the hands of the decedent in the paper bags and secure at the wrist with tape” (Fulton & Assid, 2006, p. 574).

- a. Reported on the emergency department nursing notes
- b. Medical examiner forensic photograph folder

(Code: 1 =Yes, 2 = No)

- i. Skip Q 47-50 if No

47. Type of bags placed on decedent hands:

- a. Medical examiner forensic photograph folder

(Code: 1 =Paper bag, 2 = Plastic bag)

48. Right, left or both hands bagged:

- a. Reported on the emergency department nursing notes
- b. Medical examiner forensic photograph folder

(Code: 1 =Right hand, 2 = Left hand, 3 = both hands)

49. Procedure (hands bagged) documented on medical record: reported on emergency department nursing notes (Code: 1 =Yes, 2 = No)

- i. Skip Q 51 if No

50. Procedure (hands bagged) documented by healthcare provider: reported on emergency department nursing notes (Code: a. RN 1 =Yes, 2 = No, b. MD 1 =Yes, 2 = No, c. PD 1 =Yes, 2 = No)

VIII. Police Information:

51. Name & address of police agency involved in case: reported on medical examiner's investigator report section 4 or police report (will survey police departments & Code accordingly)

52. Police case number: reported on medical examiner's investigator report section 4 or police report

53. Police document clothing left at scene: police report (narrative section or scene description)

(Code: 1 = Yes, 2 = No, 0 = Unknown [no police report in record])

54. Police document EMS remove clothes: police report (narrative section or scene description)

(Code: 1 = Yes, 2 = No, 0 = Unknown [no police report in record])

IX. Medical Examiner Information

55. Decedent arrived at MEO: reported in the medical examiner forensic photograph folder, arrival picture (Code: 1 = fully dressed [pants, shirt, shoes], 2 = unclothed, 3 = hospital gown, 4 = partial dressed [any clothing present])

56. Is evidence present with decedent on arrival to MEO: reported on autopsy report under external appearance (Code: 1 = Yes, 2 = No)

i. Skip Q 58-61 if No

57. If evidence is present with decedent on arrival to MEO, list: reported on autopsy report under external appearance (Code: a. Clothing 1 = Yes, 2 = No; b. Cartridges 1 = Yes, 2 = No; c. Hands bagged 1 = Yes, 2 = No)

ii. Skip Q 59-61 if No

58. If clothing is present with the decedent, is it in a: reported on autopsy report under external appearance and medical examiner forensic photograph folder (Code: 1 = paper bag, 2 = plastic bag, 3 = body bag, 4 = left on body)

59. If clothing is present with the decedent, is it: reported on autopsy report under external appearance and medical examiner forensic photograph folder (Code: 1 = packaged appropriately, 2 = not packaged appropriately)

a. packaged appropriately = paper between soiled articles, folded OR left on body

b. not packaged appropriately = rolled, balled up clothing, no paper between soiled articles, placed in plastic bag

60. Is clothing cut away/around cartridges (holes): reported in the medical examiner forensic photographic folder (Code: 1 = Yes, 2 = No, 3 = Not cut, 0 = Unknown/no clothes)

61. Are medical interventions present on the decedent upon arrival to the MEO: reported on autopsy report under evidence of medical intervention and medical examiner forensic photograph folder (Code: 1 = Yes, 2 = No)

- 62. If medical interventions are present, list:** reported on autopsy report under external appearance
(Code: a. IV 1 = Yes, 2 = No; b. ETT 1 = Yes, 2 = No; c. Foley 1 = Yes, 2 = No; d. Anatomical gifts 1 = Yes, 2 = No; e. NGT/OG 1 = Yes, 2 = No; f. Chest tube 1 = Yes, 2 = No; g. C-Collar 1 = Yes, 2 = No; h. ECG lead 1 = Yes, 2 = No; i. VS equip 1 = Yes, 2 = No; j. suture/staple 1 = Yes, 2 = No; k. Other)
- 63. Manner of death classified by Pathologist:** reported on death certificate section 40
(Code: 1 = Suicide, 2 = Homicide, 3 = Accident, 4 = Undetermined)
- 64. Type of wound identified by Pathologist:** reported on autopsy report under findings
(Code: 1 = Firearm, 2 = Firearm / Other)

X. Legal Proceedings

- 65. Did the case go to trial:** reported by the criminal subpoena in medical examiner folder
(Code: 1 = Yes, 2 = No)
i. Skip Q 66-73 if No

XI. Legal Proceedings

- 66. Name of court:** reported on the criminal subpoena in the medical examiner folder (will survey police departments & Code accordingly)
- 67. Cause number:** reported on the criminal subpoena in the medical examiner folder (list number)
- 68. Transcript available:** reported in court database (Code: 1 = Yes, 2 = No)
- 69. Trial Outcome:** reported in court database
(Code: 1 = Appeal, 2 = Guilty plea, 3 = Dismissed, 4 = Acquitted, 5 = Out on bond, 6 = guilty/still in jail, 7 = Active case, 8 = No information)
- 70. Evidence admitted:** reported in Exhibits (Code: 1 = Yes, 2 = No)
- 71. Type of evidence admitted:** reported in Exhibits
(Code: 1 = clothes collected by HCP, 2 = Cartridge collected by HCP, 3 = Pictures of clothing by ME, 4 = Pictures/Cartridge collected by ME, 5 = Pictures of clothing by PD, 6 = Pictures of clothing by PD & ME)
- 72. Called to testify:** reported under Reporters Record
(Code: a. RN 1 = Yes, 2 = No, b. ME 1 = Yes, 2 = No)
- 73. Date of court case:** reported on reporters record (mm/yyyy)

APPENDIX D
Evidence Collection Instrument

Evidence Collection Instrument ©

I. Demographic Information

1. Reference Number:
2. Date of data collection: / / (mm/dd/yyyy)
3. Date of birth: / / (mm/dd/yyyy) Age
4. Sex ☐ 1 Male ☐ 2 Female
5. Race: ☐ 1 Caucasian ☐ 2 Hispanic ☐ 3 African-American ☐ 4 Asian ☐ 5 Other (specify):

6. Date of death: / / (mm/dd/yyyy)
7. Time of death: (military time, i.e. 0700, 1600)
8. Date of injury: : / / (mm/dd/yyyy)
9. Time of injury: : (military time, i.e. 0800, 1600)
10. Setting of death: ☐ 1 ER ☐ 2 OR ☐ 3 ICU ☐ 4 General floor

II. Hospital Information

11. Hospital: ☐ 1 TMC ☐ 2 Non-TMC
12. Arrival time to ER: (military time)
13. Method of arrival to ER: ☐ 1 Car ☐ 2 Drop-off ☐ 3 Walk-in ☐ 4 Life Flight ☐ 5 Police agency
EMS ☐ 6 Transfer from ☐ 7 Other hospital Unknown ☐ 99 (specify): _____
14. Pronounced dead upon arrival to ER: ☐ 1 Yes ☐ 2 No
15. Discharged from ER to: ☐ 1 OR ☐ 2 ICU ☐ 3 General floor ☐ 4 Morgue ☐ 5 Another hospital

III. Evidence Collection in Hospital (ER & OR) – Cartridges

16. Cartridge retrieval (including bullet, slug, wadding, or pellet):

☐ Yes ☐ No

if yes complete entire survey, if no skip IV

IV. Detailed Evidence Collection in Hospital (ER & OR) – Cartridges

17. List # of cartridges

18. Cartridge retrieved in: ☐ OR ☐ ER

19. Cartridge retrieval documented on medical record: ☐ Yes ☐ No (skip Q 20 if No)

20. Cartridge retrieval documented by healthcare provider: ☐ RN ☐ MD 99 Unknown

21. Pictures of cartridges documented on medical record: ☐ Yes ☐ No

22. Cartridge preserved documented on medical record: ☐ Yes ☐ No (skip Q 23-25 if No)

23. Cartridge preserved in as documented on medical record: a) Urine specimen cup ☐ Yes ☐ No

b) Paper bag ☐ Yes ☐ No c) Envelope: ☐ Yes ☐ No

24. Procedure documented: a) Taped ☐ Yes ☐ No b) Stapled: ☐ Yes ☐ No

c) Initialed ☐ Yes ☐ No d) Date: ☐ Yes ☐ No e) Time: ☐ Yes ☐ No

f) Pt. Name: ☐ Yes ☐ No g) Pt. Identifier: ☐ Yes ☐ No

25. Where preserved: ☐ locked under supervision 99 unknown

26. Cartridge preservation documented: ☐ Yes ☐ No (skip Q 27 if No)

27. Cartridge preservation documented by healthcare provider: ☐ RN ☐ MD 99 unknown

28. Cartridge chain of custody documented by healthcare provider: ☐ RN ☐ MD 99 unknown

29. Agency receiving cartridge: ☐ PD ☐ ME ☐ hosp. path ☐ hosp. security 99 unknown

V. Evidence Collection in Hospital (ER & OR) – Clothing

30. Decedent clothed upon arrival to hospital ☐ 1 Yes ☐ 2 No ☐ 3 Not documented

If yes complete entire survey, if no skip VI

VI. Detailed Evidence Collection in Hospital (ER & OR) Clothing:

31. Clothing cut (pre-hospital) documented on ER record: ☐ 1 Yes ☐ 2 No

32. Clothing documented on: a) EMS record ☐ 1 Yes ☐ 2 No b) ER record ☐ 1 Yes ☐ 2 No
c) OR record ☐ 1 Yes ☐ 2 No

33. Clothing retrieval documented on medical record: ☐ 1 Yes ☐ 2 No ☐ 3 did not remove
☐ 4 clothing cut off

(skip Q 34-35 if No; skip Q 34-35 if did not remove or clothing cut off)

34. Clothing retrieved in (location): ☐ 1 OR ☐ 2 ER ☐ 99 Unknown

35. Clothing retrieval documented by healthcare provider: ☐ 1 RN ☐ 2 MD ☐ 3 Other
☐ 99 Unknown

36. Pictures of clothing documented on medical record: ☐ 1 Yes ☐ 2 No ☐ 2

37. Clothing preservation documented: ☐ 1 Yes ☐ 2 No (skip Q 38-42 if No)

38. Clothing preservation documented by healthcare provider: ☐ 1 RN ☐ 2 MD ☐ 3 Other
☐ 99 Unknown

39. Type of clothing documented: a) shirt ☐ 1 Yes ☐ 2 No b) outer pants ☐ 1 Yes ☐ 2 No

c) shoes ☐ 1 Yes ☐ 1 No d) socks ☐ 1 Yes ☐ 2 No e) undergarments ☐ 1 Yes ☐ 2 No

f) belt ☐ 1 Yes ☐ 2 No g) wallet ☐ 1 Yes ☐ 2 No h) dress/skirt ☐ 1 Yes ☐ 2 No

i) head covering ☐ 1 Yes ☐ 2 No j) valuables ☐ 1 Yes ☐ 2 No k) Other (specify): _____

40. Clothing preserved in as documented on medical record: ☐ 1 paper bag ☐ 2 plastic bag
☐ 3 none

41. Procedure documented: a) Taped ☐ 1 Yes ☐ 2 No b) Stapled ☐ 1 Yes ☐ 2 No

c) Initialed ☐ 1 Yes ☐ 2 No d) Date ☐ 1 Yes ☐ 2 No e) Time ☐ 1 Yes ☐ 2 No

f) Pt. Name ☐ 1 Yes ☐ 2 No g) Pt. Identifier ☐ 1 Yes ☐ 2 No

42. Where preserved: ☐ 1 locked under supervision ☐ 2 Left on body ☐ 99 Unknown

43. Clothing chain of custody documented on medical record: ☐ 1 Yes ☐ 2 No (skip Q 44 if no)

44. Clothing chain of custody documented by healthcare provider: ☐ 1 RN ☐ 2 MD ☐ 99 unknown

45. Agency receiving clothing ☐ 1 PD ☐ 2 ME ☐ 3 Family ☐ 4 Hospital Security ☐ 99 Unknown

VII. Detailed Evidence Collection in Hospital (ER & OR) – Gunpowder Residue

46. Paper bags placed on decedent hands: ☐ 1 Yes ☐ 2 No (skip Q 47-50 if No)

47. Type of bags placed on decedent hands: ☐ 1 Paper bags ☐ 2 Plastic bags

48. Right, left or both hands bagged: ☐ 1 Right hand ☐ 2 Left hand ☐ 3 Both hands

49. Procedure (hands bagged) documented on medical record: ☐ 1 Yes ☐ 2 No (skip Q 51 if No)

50. Procedure (hands bagged) documented by whom: a) RN ☐ 1 Yes ☐ 2 No, b) MD ☐ 1 Yes ☐ 2 No, c) PD ☐ 1 ☐ 2

VIII. Police Information

52. Name & address of police agency involved in case:

53. Police case #:

54. Police document clothing left at scene: ☐ 1 Yes ☐ 2 No ☐ 99 Unknown

55. Police document EMS remove clothes: ☐ 1 Yes ☐ 2 No ☐ 99 Unknown

IX. Medical Examiner Information

56. Decedent arrived at MEO: ☐ 1 fully dressed ☐ 2 unclothed ☐ 3 hospital gown

☐ 4 Partial dressed: (list article)

57. Is evidence present with decedent on arrival to MEO: ☐ 1 Yes ☐ 2 No (Skip Q 58-61 if no)

58. If evidence is present with decedent on arrival to MEO, list: a) clothing ☐ 1 Yes ☐ 2 No

b)cartridges ☐ 1 Yes ☐ 2 No c)hands bagged ☐ 1 Yes ☐ 2 No(Skip Q 59-61 if clothing is no)

59. If clothing is present with the decedent, is it in a: ☐ 1 paper bag ☐ 2 plastic bag

☐ 3 body bag ☐ 4 left on body

60. If clothing is present with the decedent, is it: ☐ 1 packaged appropriately ☐ 2 not packaged appropriately

61. Is clothing cut away/around cartridges (holes): ☐ 1 Yes ☐ 2 No ☐ 3 Not cut

62. Are medical interventions present on the decedent upon arrival to the MEO: ☐ 1 Yes ☐ 2 No

63. If medical interventions are present, list: a)IV ☐ 1 Yes ☐ 2 No b)ETT/OPA ☐ 1 Yes ☐ 2 No

c)Foley ☐ 1 Yes ☐ 2 No d)anatomical gifts ☐ 1 Yes ☐ 2 No e)NGT/OG ☐ 1 Yes ☐ 2 No

f)Chest tube ☐ 1 Yes ☐ 2 No g) C-Collar ☐ 1 Yes ☐ 2 No h)VS equip ☐ 1 Yes ☐ 2 No

i)suture/staple ☐ 1 Yes ☐ 2 No j)Other (specify): _____

64. Manner of death classified by Pathologist ☐ 1 Suicide ☐ 2 Homicide

☐ 3 Accident ☐ 4 Undetermined

65. Type of wound identified by Pathologist: ☐ 1 Firearm ☐ 2 Firearm / Other

X. Legal Proceedings

66. Did the case go to trial:

If no, skip XI

Yes No

XI. Detailed Legal Proceedings

67. Name of court:

68. Cause #

69. Transcript available: ☐ 1 Yes ☐ 2 No

70. Trial outcome: ☐ 1 appeal ☐ 2 guilty plea ☐ 3 dismissed ☐ 4 acquitted ☐ 5 out on bond
☐ 6 guilty/still in jail ☐ 7 Active case ☐ 8 no information

71. Evidence admitted: ☐ 1 Yes ☐ 2 No

72. Type of Evidence admitted:

☐ 1 Clothes collected by HCP ☐ 2 Cartridge collected by HCP ☐ 3 Pictures of clothing by ME
☐ 4 Pictures/Cartridge collected by ME ☐ 5 Pictures of clothing by PD ☐ 6 Pictures of
clothing by PD & ME

73. Called to testify: RN ☐ 1 Yes ☐ 2 No; b) ME ☐ 1 Yes ☐ 2 No

78. Date of court case: / /

APPENDIX E

Emergency Department Policy & Procedure

POLICY

- Title:** Forensic Evidence Collection, Preservation & Documentation
- Purpose:** To provide a systemic approach for the identification, preservation and maintenance of chain of custody of forensic evidence for gunshot wound clients.
- Statement:** Registered Nurses employed in the Emergency Room are required to collect, preserve, document and maintain evidence for all clients presenting with injuries sustained by any type of gun. This policy applies to both living and dead clients. These standardized interventions will be completed for every gunshot wound client according to the institutional procedure for forensic evidence collection, preservation, and documentation of evidence. This evidence assists in the criminal investigation of the incident.

DEFINITIONS:

- A. Evidence:** something (including testimony, documents and tangible objects) that tends to prove or disprove the existence of an alleged fact; The collective mass of things, especially testimony and exhibits, presented before court in a given dispute
- B. Evidence Preservation:** procedures followed to preserve the integrity of evidence
- C. Chain of Custody:** standardized process of identification, collection, and transfer of evidence from person to person to maintain the integrity of evidence

PROCEDURE:

Gathering Evidence

General Procedure for all evidence collection

1. Wear clean gloves (prevents cross-contamination, change gloves for each new specimen)
2. Each piece of evidence is individually packaged and documented (A: shirt; B: Pants; C: knife, etc)
3. When closing an envelope use a water moistened gloved finger
4. Sealing a bag
 - i. Fold the paper bag to seal
 - ii. Place tape around edges
 - iii. Place patient sticker or write patient's name, ID number and date of birth
5. Collector should initial, date & time ½ on the tape & ½ on the package

6. After evidence is collected

- i. Document type of evidence collected on medical record
- ii. Notify proper law enforcement for evidence pick up
- iii. Document in medical record who received evidence for chain of custody maintenance

I. Clothing

- a. Cut clothing along the seams, unless holes are present
- b. Cut away from holes, blood splatter and gunpowder
- c. Do not shake clothes
- d. Keep the clothes off the floor

How to collect clothing evidence

- i. Place clothes on a clean, white sheet either on empty stretcher or cabinet top
- ii. Place clothing on the sheet
- iii. Place each garment in individual paper bags with correct labels
- iv. Fold and place the sheet itself into a separate paper bag

How to collect clothing evidence if clothing is wet, blood/bodily stains

- i. Place a clean piece of paper over the stains before folding (avoiding cross contamination)
- ii. If bloody/bodily fluid, double bag in a paper bag, can use an open plastic bag for transport only (notify law enforcement that clothing is wet immediately)
- iii. Do not use hair dryers, fans or other mechanical devices to dry clothes (these devices are not used in order to preserve the integrity of the item from heat or environmental contamination)
- iv. Document procedure
- v. Document in medical record who received evidence for chain of custody maintenance

II. Cartridge:

- i. Use a rubber-tipped forceps and/or grasping clamp
- ii. Handle the bullet and/or bullet fragments as little as possible (never contact with another metal surface)
- iii. Each bullet in separate container with padding
- iv. Do not write on cartridge
- v. Document on medical record procedure
- vi. Document in medical record who received evidence for chain of custody maintenance

III. Gunshot Residue

- i. Suspected firearm involvement
- ii. Paper bags over hands and secure with tape

- a. Do not shake bag open
- b. Carefully open bag and slide the hand into bag
- c. Secure with tape
- d. Document procedure on medical record

Forensic Evidence Documentation

Affix Patient Label Here

Police agency involved: _____ Police agency case number: _____

Description of the incident in the patient's own words/EMS report: _____

EVIDENCE COLLECTED:

☐ Shirt x _____ ☐ Pants x _____ ☐ Shoes x _____ ☐ Socks x _____

☐ Undergarments x _____ ☐ Belt x _____ ☐ Wallet/Valuables x _____

☐ Dress/shirt x _____ ☐ Head covering x _____ ☐ Cartridges x _____

☐ Wet (list item): _____ ☐ Dry (list item): _____

EVIDENCE PRESERVED IN:

☐ Paper bag ☐ Specimen Cup ☐ Taped ☐ Initialed ☐ Dated ☐ Time ☐ Pt label

GUNPOWDER RESIDUE:

☐ Paper bag placed ☐ Right hand ☐ Left hand

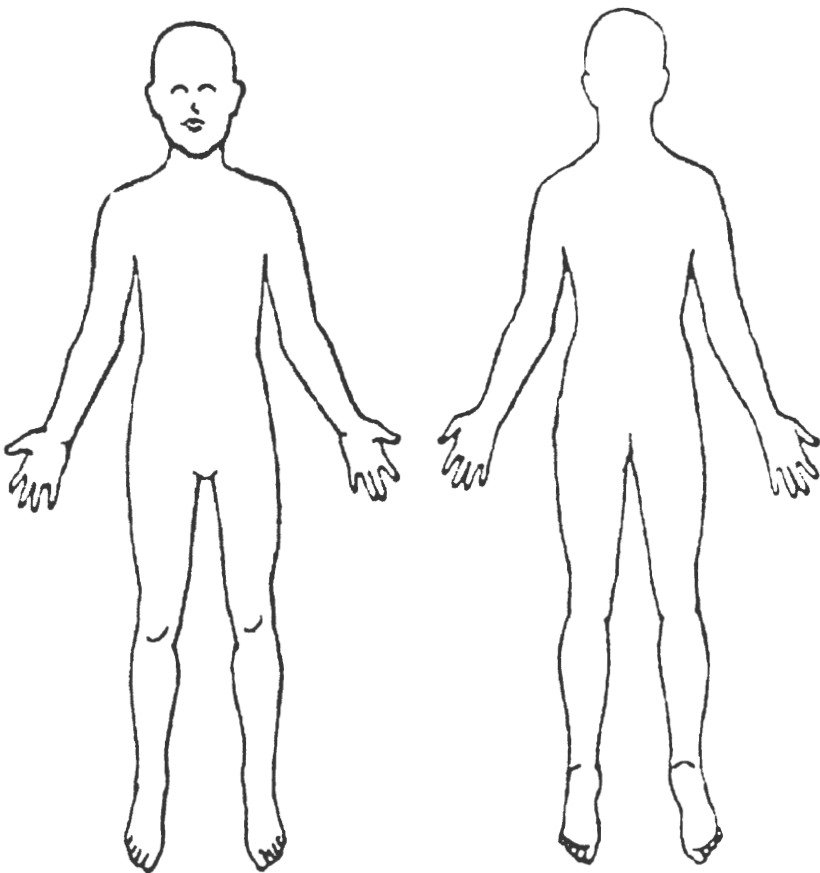
DISPOSITION OF EVIDENCE:

☐ Law Enforcement Agency (list officer name & badge number): _____

☐ Hospital Security Officer (list officer name & ID number): _____

Date/Time	Initials	Signature & Employee ID number

DOCUMENTATION OF INJURY:



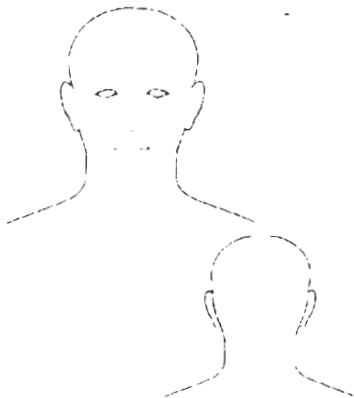
1. Contusion

2. Incisions

3. Lacerations

4. Abrasion

5. Circular defect



Injury Descriptions

APPENDIX F

On The Edge Publication: Editor Review Statement



International Association of Forensic Nurses

Angela F. Snow, PhD(c), RN
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May 6, 2009

To Whom It May Concern,

Currently Angela F. Snow has an article under review for possible publication.

Best Regards,

Janean Fossum, BSN, RN, CDDN
Managing Editor - *On The Edge*
International Association of Forensic Nurses Newsletter
PO Box 11053
Eugene, Oregon 97440
541 915 3707

APPENDIX G

Critical Care Nursing Quarterly: Editor Review Statement

CRITICAL CARE NURSING QUARTERLY

Janet M. Barber, MSN, RN, FAAFS

Editor

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Greensburg, IN 47240 8138

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duvallfarm@earthlink.net (e-mail)

May 22, 2009

Angela Snow

19538 Shady Bank Drive

Tomball, TX 77375

Dear Angela:

I have received your article "Role Implications for Nurses Caring for Gunshot Wound Victims." It is currently being reviewed by members of our Editorial Board. A publication decision is expected within one month.

Thank you for your submission of an interesting and well-written manuscript.

Sincerely yours,



Janet M. Barber, MSN, RN, FAAFS

Editor

cc. Donna Caldwell



LIPPINCOTT WILLIAMS & WILKINS

APPENDIX H

Journal of Forensic Nursing: Editor Review Statement

Journal of
FORENSIC NURSING
The Official Journal of the International Association of Forensic Nurses

Louanne Lawson, PhD, RN, FAAN, DF-IAFN
Editor-in-Chief
East Holly Avenue, Box 56
Pitman, NJ 08071-0056
Phone: 856.256.2300
Fax: 856.589.7463

26-Apr-2009

re: JFN-2009-019

Dear Ms. Snow:

Your manuscript entitled "Documentation of Forensic Physical Evidence from Fatal Gunshot Wound Victims by Registered Nurses and Its Admissibility in Legal Proceedings" by Snow, Angela; Cesario, Sandra; Derrick, Sharon; Yoder-Wise, Patricia; DelloStritto, Rita, has been successfully submitted online and is presently being reviewed and given full consideration for publication in the Journal of Forensic Nursing.

Thank you for your submission.

Louanne Lawson, RN, PhD, FAAN, DF-IAFN
Editor in Chief
Journal of Forensic Nursing