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THE JOURNAL OF Legal Nurse Consulting



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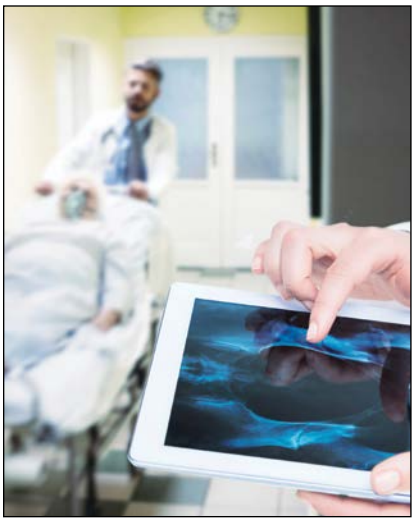

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PURPOSE

The purpose of The Journal is to promote legal nurse consulting within the medicallegal community; to provide novice and experienced legal nurse consultants (LNCs) with a quality professional publication; and to teach and inform LNCs about clinical practice, current legal issues, and professional development.

MANUSCRIPT SUBMISSION

The Journal accepts original articles, case studies, letters, and research. Query letters are welcomed but not required. Material must be original and never published before. A manuscript should be submitted with the understanding that it is not being sent to any other journal simultaneously. Manuscripts should be addressed to JLNC@aalnc.org. Please see the next page for Information for Authors before submitting.

MANUSCRIPT REVIEW PROCESS

We send all submissions blinded to peer reviewers and return their blinded suggestions to the author. The final version may have minor editing for form and authors will have final approval before publication. Acceptance is based on the quality of the material and its importance to the audience.

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ARTICLE SUBMISSION

The Journal of Legal Nurse Consulting (JLNC), a peer reviewed publication, is the official journal of the American Association of Legal Nurse Consultants (AALNC). We invite interested nurses and allied professionals to submit article queries or manuscripts that educate and inform our readership about current practice methods, professional development, and the promotion of legal nurse consulting within the medical-legal community. Manuscript submissions are peer-reviewed by professional LNCs with diverse professional backgrounds. The *JLNC* follows the ethical guidelines of COPE, the Committee on Publication Ethics, which may be reviewed at: http://publicationethics.org/resources/code-conduct.

We particularly encourage first-time authors to submit manuscripts. The editor will provide writing and conceptual assistance as needed. Please follow this checklist for articles submitted for consideration.

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- Manuscript length: 1500 – 4000 words
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- Put title and page number in a header on each page (using the Header feature in Word)
- Place author name, contact information, and article title on a separate title page, so author name can be blinded for peer review
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Acceptance will be based on the importance of the material for the audience and the quality of the material, and cannot be guaranteed. All accepted manuscripts are subject to editing, which may involve only minor changes of grammar, punctuation, paragraphing, etc. However, some editing may involve condensing or restructuring the narrative. Authors will be notified of extensive editing. Authors will approve the final revision for submission.

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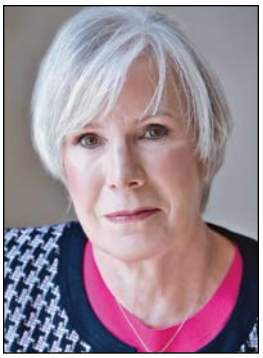

Mary Flanagan,
BSN, RN, CNOR, LNCC

President, AALNC

President's Update

Dear AALNC Members and colleagues,

I love to sew, and I'm good at it. I'm not a master seamstress by any means, but a rather impressive share of Halloween costumes, home décor (including drapes), costumes for many school plays, and Christmas pageants in my CV. And quilts; I love quilting.

When I opened my LNC practice, our son was in high school, and now, 11 years hence, my sewing machine has seen little action as I focused on my clinical work, building my practice, and volunteering with AALNC. I recently saw a project that caught my eye, and I committed to scheduling some sewing time into my over-booked schedule. I gathered everything I needed for the project: fabric, batting, thread, and fresh sharp needles, and off I went. I have a great sewing machine and am very familiar with its functions and capabilities, so when I broke three needles in a row, I was frustrated and incredulous this rare event was happening to me! What was going on?

Mr. Flanagan suggested that perhaps the problem was an "operator error." He reminded me I had been away from the hobby for quite a while. Perhaps I should consult the owner's manual.

So, what's the connection between sewing and legal nurse consulting? Let's start with training. I took a very basic sewing class through adult education at a local high school many years ago. It covered the basics of how to layout and cut out a pattern, how to sew a straight seam, how to create a dart, and finally, how to put in a zipper. It got me started, but by no means did it cover more advanced techniques I have since picked up along the way.

Similarly, I enrolled in a 6-day immersive legal nurse consulting class culminating in a "certification" exam. I passed the test and added an optional 2-day session that focused on marketing to potential attorney clients. Three months later, I hung out my shingle, and I got my first case about six months later. Did I know everything about legal nurse consulting when I started? No. Do I know more now? Yes. Do I know everything? Not by any means. But what I did learn early in my LNC career is that success would be a marathon, not a sprint, and continuous support and education, like that provided by AALNC, is critical to establish and grow my independent LNC practice. When I completed my basic sewing class, I did not know, nor would I attempt to make buttonholes in a jacket. That would come much later, like my LNCC certification. I don't remember when I made my first decent buttonholes, but I know I took over four years to be eligible to sit for the LNCC examination.

When I couldn't figure out why these needles kept breaking, I sought help, and I listened to my husband's advice. I dusted off the manual and realized that I had missed a basic yet critical step when winding the bobbins. Problem solved. Like learning to sew, if you need a little help with your chronologies or reports, you can consult with a fellow member, refer to your copy of *Legal Nurse Consulting Principles and Practices 4th edition*, post your question on the report writing shared interest group (SIG), or perhaps research an archived JLNC or webinar on the topic.

Over the next few months, AALNC will continue to provide the best LNC education available through our many online products, monthly webinars, SIGs, our content hub, *The Briefing,* and our eagerly awaited return to an in-person forum in April 2022, all designed

Continued on page 32

Editor's Note

Martha R. Kelso,
RN, HBOT

Editor, JLNC

Dear Members and Colleagues,

Our winter edition signifies the year is winding down and coming to a close. Despite all the challenges we have faced personally and professionally in 2021, we have grown as individuals and an organization. The journal has grown. The organization has grown. Hopefully, your connections and business or work as Legal Nurse Consultants have also evolved.

At the beginning of the new year, we look to the AALNC for CEs, webinars, training, education, networking, and so much more! I'm looking forward to the AALNC 2022 Forum occurring in April. I'm excited to see everyone in person in Orlando, Florida. Please take time to seek me out and introduce yourselves. I'm happy to introduce you to others as well.

Don't forget to seek out the articles inside the journal with CEs. Our committee has selected the manuscripts that offer benefits for CEs to LNCs. The CEs are very affordable and a benefit to LNCs. Also, if you want to use the *Journal of Legal Nurse Consulting* to advertise your services or business, the ads are affordable and reasonable for AALNC members. If you desire growth for your business for 2022, consider using the journal to advertise. There is limited advertising space, so please reach out via email to sales@aalnc.org to inquire about ad space, size, and pricing for the 2022 journals.

As the new year begins, so do new projects and initiatives. If you have ideas on how the journal can support you in your endeavors as LNCs, please reach out to me and let me know. I'm interested in hearing how the journal can highlight the importance of LNCs while promoting us as a profession. We will be releasing updated manuscript submission criteria. Being published in a peer-reviewed journal elevates you as a professional and speaks to the level of expertise you offer. If you have never been published in a peer-reviewed journal and would like support, our committee members for the journal are here to help. Please reach out. We are here to support you in your profession and your endeavors.

Our spring journal will give updates on COVID-related litigation. We are still accepting manuscripts from authors. If you have been involved in COVID litigation cases or have information regarding COVID litigation, we want to hear from you. This vital topic is affecting courts at state and national levels. As litigation continues to get into full swing, the information on cases will become more critical as more claims are listed. Your experience and insight are vital for fellow LNCs to understand and be aware of, considering the COVID litigation tracker is ramping up.

The journal will accept applications for new committee members just after the first of the year. We seek to add subject matter experts for our peer-review process to this working committee. Watch for information from the AALNC on how to join this interactive and engaging group, as well as the requirements to participate.

I hope this year ends in peace and comfort for you while the new year brings renewed strength and energy to conquer your dreams. See you next year!

Sincerely,

Martha R. Kelso, RN, HBOT

Legal Nurse Consultant Role in Independent Medical Examinations

Marilyn E. McCullum, BSN, RN, CEN

Keywords: DME, defense medical exam, percipient witness, fact witness, nurse observer, Code of Procedure

Legal nurse consultants (LNCs) are evolving as nurse observers in Independent Medical Examinations (IMEs). The savvy attorney utilizes the LNCs medical knowledge, interdisciplinary communication, and cultural sensitivity to give their client a proficient observer during their IME. The LNC is aware of what court documents they should review, what state regulations to follow, and what special considerations may occur. As the most trusted profession, nurses are inherently credible and established in front of a jury, as well as being sympathetic and providing appropriate education to each client.

INTRODUCTION

In the course of a client's legal journey, they may be asked to participate in an Independent Medical Examination. Independent medical examinations (IMEs) are medical examinations performed by physicians or other examiners who have not previously treated the injured party. The IME examiners' primary goal is to evaluate the injured party's prior treatment and the current condition of the injuries stated by the plaintiff. In certain states, IMEs, also called Defense Medical Examinations (DMEs), are requested and compensated by the defense, and the typical doctor-patient relationship does not exist. The injured party is aware that doctor confidentiality is waived, as all findings will be submitted to both defense and plaintiff attorneys. The examiner's role is also severely limited in an IME, as they are restricted to examining and interrogating only what pertains to the event in

question. In many cases, the examiner cannot ask the injured party about the event, instead of relying on previous physicians' reports, hospital and other medical records, and depositions.

LEGAL REPRESENTATIVES DURING INDEPENDENT MEDICAL EXAMS

Because of the unusual nature of these examinations, the injured party is permitted to have a legal representative with them at the time of the examination. Traditionally, attorneys would send their paralegals to act as legal representatives. Paralegals are well-versed in what is and is not permitted during an IME, and they can act as a liaison between the injured party and the doctor and his staff.

However, paralegals cannot testify in court if the examiner's report differs from what the paralegal noted during the examination. Paralegals are not medically trained, leaving them in the dark about what actual examinations were performed on the injured party. Attorneys began looking for a solution and came upon legal nurse consultants (LNCs).

LEGAL NURSE CONSULTANTS AS IME NURSE OBSERVERS

LNCs are experienced nurses in a specialized field of medicine who utilize that knowledge to bridge the gap between law and medicine. LNCs can broaden their scope by participating as legal nurse observers in IMEs. As trained IME observers, LNCs use their medical knowledge to discern how the examiner conducts the examination. Suppose the nurse observer needs to raise an objection to the examiner. In that case, they have years of experience communicating with physicians and other medical providers to help facilitate the objection in the most non-threatening yet effective manner. Using a legal nurse consultant instead of a paralegal ensures that the attorney has an unbiased observer with experience in law and medicine.

This activity is designed to augment the knowledge and skills of legal nurse consultants and assist in their understanding of the analysis of the LNC role in Independent Medical Examinations.

Upon completion of the learning activity the leaner will be able to:

a. State the benefits of using a LNC in IMEs
b. Identify the role of the LNC as an IME observer
c. Identify some special consideration of an IME to feel confident and competent in the LNC role attending IMEs

The author, reviewers, and nurse planners all report no financial relationships that would pose a conflict of interest.

This activity has been awarded 1 Contact Hour of credit. The activity is valid for credit until December 1, 2024.

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Cost to members: $15 | Cost to non-members: $20

BENEFITS OF USING A LEGAL NURSE CONSULTANT IN IMES

Attorneys are encountering a plethora of benefits in utilizing LNCs as IME observers. Examiners are more likely to perform a more thorough examination when they know that the legal representative has a medical background. Nurse observers utilize their experience in nursing theory and practice to effectively observe and draw conclusions on the physical examination that is performed. Knowing what a test is for is pivotal to knowing if it is permitted within the IME examiner's scope; otherwise, the examiner may delve into non-injured body parts that have no bearing on the case at hand.

Nurses work in tandem with physicians and other medical providers in hospitals, nursing homes, and other environments. Having a background in working and communicating with providers ensures that the LNC is not reticent nor unprofessional in voicing an objection. While a paralegal may be reserved in voicing objections, especially in the presence of loud, opinionated providers, the LNC maintains a calm, professional demeanor. Having this demeanor in the presence of the injured party helps to put that person at ease.

According to Gallup polls, nurses have been ranked the most honest and ethical profession for the last eighteen years. Plaintiff attorneys know this, and they know that by sending a nurse with their client, the client will be more at ease having a medical professional by their side during a stressful time. If the client has any religious or spiritual concerns, nurses are trained in cultural sensitivity and can provide culturally sensitive professional support to the client's needs.

LNCs are experienced nurses in a specialized field of medicine who utilize that knowledge to bridge the gap between law and medicine.

Typically, once the examination is complete, the LNC will write a report detailing the entire process. Occasionally, an attorney will not require a written report.

Juries also inherently trust nurses. Suppose there is a discrepancy between the examiner's report and the nurse's report. In that case, the nurse may be called to testify as a percipient witness (a witness who has obtained knowledge of an event directly through their senses, generally through sight or hearing) regarding the examination. Having a medical background helps cement the nurse's testimony, and the nurse equipped with both legal and medical knowledge makes a likable yet formidable witness.

ROLE OF THE LEGAL NURSE CONSULTANT AS AN IME OBSERVER

The author of this article resides and works in California, and the process thusly illustrated is based on California's Code of Civil Procedure. Please refer to your state's regulations regarding IMEs.

Typically, the LNC will begin their preparation by reading the court paperwork once assigned to a case. There are usually two sets of paperwork available to the nurse observer: the Demand for Independent Medical Examination (sent by the defense attorney) and the Plaintiff's Response to Defendant's Demand for Physical Examination (sent by the plaintiff attorney). The Demand letter will list allowed activities and give a set number of days in which objections to the Demand can be served. The Response letter will accept or reject proposed activities, and it tends to be a bit more detailed than the Demand letter. The Response letter may indicate if the examination is to be audio recorded or if a court stenographer will be present, if certain studies such as x-rays are permitted, if the examiner may ask about the event that led to the injury, and any other stipulations. The LNC will read through these two letters and note any points of interest, such as if the examiner is permitted to audio record and if an interpreter will be required. The Response letter is the LNCs guide for the examination, and it is pivotal to truly grasp what the Response is stating.

Once the LNC has finished with the court paperwork, they will reach out to the injured party prior to the examination via telephone, usually a few days up to a week prior to the examination date. This step is an important conversation between the nurse observer and the client to establish rapport and ease the client's nerves about the upcoming examination. The nurse will provide an introduction, gather a brief history of the event from the client, explain the process of the IME as well as the limitations according to the state's regulations and the case-specific court paperwork, and answer any questions the client may have. The nurse also confirms the location and time of the examination with the client, instructs the client where they will meet the nurse observer prior to the examination, what type of clothing they should wear, and what, if anything, needs to be brought with them. Effective communication prior to the day helps decrease the client's stress, leading to a much smoother examination.

On the examination day, the LNC will arrive prior to the agreed-upon time to wait for the client in the specified location. The nurse observer will again briefly go over the process, answer any last-minute questions, and they will escort the client into the examiner's office. The LNC will verbally notify the receptionist of the client's arrival.

During the physical examination, the nurse observer will, along with the examiner, take notes on the tests performed and the client's reactions. During the examination, the LNC may audio record if deemed appropriate by the Code of Civil Procedure (each state has a different regulation) and if requested by the attorney-client. The LNC will also monitor the interview phase, fielding any restricted or inappropriate questions that may be asked. Once the examination is deemed complete, the LNC will escort the client out of the office, ensuring that no documents or paperwork are signed unless the client's legal team permits.

Typically, once the examination is complete, the LNC will write a report detailing the entire process. Occasionally, an attorney will not require a written report. However, the astute LNC will still keep a detailed record of the examination in case of future need for clarification by the attorney. The report will be concise yet complete and devoid of medical jargon that may be unclear to the layperson. There are critical times to include in each report, including client arrival, time escorted to an examination room, time examiner enters the room, and total time spent waiting. The report will also include the general layout of the examination room, body parts addressed during the physical examination, and any obvious omissions noted by the nurse observer. If the examination was recorded, the recording and the report would be sent to the attorney-client in a timely manner (usually within 48 hours of the IME appointment).

Including obvious omissions in the report may prevent unnecessary legal

sparring if the nurse observer's report differs from the examiner's. If the examiner includes details such as exact measurements in their report, and the LNC's report indicates that no measurement devices were used, the examiner's credibility suddenly dissolves. Including an obvious omission section also prevents it from being a "he said, she said" situation if both the examiner and nurse must testify, as there is a written record by the nurse observer without being privy to the examiner's report.

SPECIAL CONSIDERATIONS OF AN IME

Just as no two patients are alike in the hospital setting, no two IMEs are the same. The competent nurse observer will be fluid with rapid changes and able to adjust on the fly.

Occasionally, there is no Response letter. In this instance, the LNC should use the state's Code of Civil Procedure as its guide. Knowing the state's regulations on audio recording, permitted observers, and allowable questioning will assist the nurse observer in properly directing the flow of the examination.

If the client does not appear for their examination, the LNC should have the attorney's phone number on hand to call to inform them of the no-show. The savvy nurse observer will have a clause regarding pay in case of a no-show in their contract, as it is not uncommon for an LNC to incur long travel times to attend IMEs.

During an examination, the nurse observers may raise objections, and some examiners may object (sometimes quite violently) to these objections. The discerning nurse observer should remain calm, stay within the realm of the Response letter regarding their objections, and, if necessary, may need to pause the examination to contact the attorney's office.

Some examiners do not read the Response letters, so it is sensible and helpful to bring a printed copy of the Response letter to each examination. If the examiner declares they did not receive the Response letter, the nurse observer can use this opportunity to present them with the printed copy and give them sufficient time to read over it.

Very rarely, a paralegal or other person from the defense attorney will be present when the nurse observer

Legal nurse consultants blend their medical knowledge, cultural sensitivity, and appreciation of law to be competent and erudite IME nurse observers.

arrives with the client. The LNC should immediately call the attorney to notify them if this occurs, as this can be construed as an intimidation tactic. Under no circumstances should a member of the defense be permitted to attend an examination. Disregard for this may cause the entire examination to be challenged and excluded from admission.

Interpreters are a common special consideration, and it is worth noting that the interpreter is also hired and compensated by the defense. The Response letter should indicate if an interpreter is required. Habitually, interpreters will wait for the client and nurse observer in the lobby of the examiner's office. The LNC should obtain a business card from the interpreter to include their name, language, certification number, and expiration in their report.

Other observers may be permitted on a case-by-case basis, including other physicians/examiners, occupational therapists, life care planners, or parents. The nurse observer must take care to include all observers' names and roles. These additional observers are usually spectators only and may not ask questions or make comments during the examination.

CONCLUSION

Independent medical examinations are common, but it is a stressful day of the unknown for the injured party. Giving the injured party a legal representative who has a medical background can soothe some of those fears, ensuring an uneventful IME with no surprise discoveries or leading into an inadvertent deposition. Legal nurse consultants blend their medical knowledge, cultural sensitivity, and appreciation of law to be competent and erudite IME nurse observers. They can provide well-written reports to compare with the IME examiners' reports. They may testify if needed, and their profession ensures that the jury will see them as honest and ethical. Attorneys across the United States are turning to LNCs to be IME nurse observers, a shrewd maneuver that assures examiner compliance, client cooperation, and attorney satisfaction.

Marilyn McCullum, BSN, RN, CEN is the owner of McCullum Legal Consulting in California. She is an emergency room expert witness and an LNC consultant with experience in trauma and emergency medicine. She was a travel nurse for several years, giving her the unique opportunity to work in a variety of hospitals across the nation. Her consulting experience includes medical case reviews, expert medical declarations, pharmacovigilance nursing, and toxic torts. She also offers IME nurse observations in the San Francisco Bay Area. She is presently working as a Spanish-English bilingual bedside nurse. She can be contacted at McCullumLegal@gmail.com.

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Terminal Ballistics:

The Science of Ballistic Projectile Wounding

Buford Boone
Brett Maurer, BFA
P.K. Maurer, MD
Gary Roberts, DDS
Tyler Schmidt, DO

Keywords: Gunshot wounds, projectile injuries, ballistics, trauma, wound

Military conflict and civilian strife have been a common cause of injury and death for millennia, often outpacing many naturally occurring diseases. Wounds and fatalities attributable to firearms account for variable proportions of incidents, generally over 60% of all hospital admissions secondary to violent altercations. While abundant literature exists regarding the treatment of gunshot wounds (GSW), the fundamental principles of terminal ballistics and physiologic events that occur at the time of wounding are less well represented in the medical literature. When considering the frequency of ballistic trauma from projectiles, there is a relatively low volume of publications in the current literature dealing with the basic physiology of such injuries. Therefore, the article provides legal nurse consultants, healthcare professionals, and the public with the fundamental principles of firearms ballistics and the physiologic events that occur at the time of wounding. The data related to the mechanism of injury from projectiles facilitates the understanding of the legal issues involved in firearms cases. Illustrative historical examples and dynamic graphics reveal interesting ballistics details that extend the content of the article.

Leon Trotsky (1879-1940) stated,

"You may not be interested in war, but war is interested in you."

(Van Creveld, 2017, p.1)

Military conflict and civilian strife have been a common cause of injury and death for millennia, often outpacing many naturally occurring diseases (Garfield & Neugut, 1991). Wounds and fatalities attributable to firearms account for variable proportions of incidents, generally in excess of 60% of all hospital admissions secondary to violent altercations (Goldberg, 2010). In urban, civilian, military, or tropical environments, the combat range is often less than 100 meters. Over 90% of civilian law enforcement engagements are under 10 meters distance, as are almost all common civilian self-defense incidents (Walker et al., 2012). The closer the combat range of engagement on military battlefields, the greater the likelihood of firearm utilization. As combat distances extend beyond 200 meters, there is greater use of mortars, artillery, and close air support assets, resulting in increased blast-related wounds, representing a distinct type of ballistic injury (Prat et al., 2017).

While abundant literature exists regarding the treatment of gunshot wounds, the fundamental principles of terminal ballistics and the physiologic events that occur at the time of wounding are less well represented in the medical literature. Firearms ballistics is basically considered in three components:

1. **Internal Ballistics** – the study of projectile behavior from the time the cartridge is fired and propellant ignited until the bullet exits the firearm's barrel.
2. **External Ballistics** – the study of projectile flight through the air after exiting the barrel of the firearm, until a target or object is hit.
3. **Terminal Ballistics** – the study of projectile behavior from the time the first target, intermediate barrier, or object is hit until the projectile stops moving.

This activity is designed to provide legal nurse consultants and other professionals the fundamental principles of terminal ballistics and the physiologic events that occur at the time of wounding.

Upon completion of the learning activity the learner will be able to:

a. Describe components of firearms ballistics and basic parameters of projectile injuries
b. Identify primary considerations predominate in terminal ballistics and the role of the LNC in a ballistics case
c. Identify the structural varieties of bullets and the tissue damage that can occur and physiological events as they pertain to incapacitation

The author, reviewers, and nurse planners all report no financial relationships that would pose a conflict of interest.

This activity has been awarded 1 Contact Hour of credit. The activity is valid for credit until December 1, 2024.

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INCAPACITATION

The lawful use of lethal force, including firearms, is only justified to rapidly incapacitate and stop dangerous individuals who pose an immediate threat to public safety and prevent them from continuing their violent actions. The last 30 years of modern wound ballistic research have demonstrated yet again what historical reports have always indicated – that there are only two valid methods of incapacitation: one based on psychological factors and the other physiologic damage.

Physiologic incapacitation may be defined as causing sufficient injury to result in the cessation of hostile actions. This does not imply a specific need nor desire for a fatal result. In a military conflict, some have felt that wounding may have a greater effect than death, given the wounded soldiers require evacuation, medical treatment, and utilization of precious resources and supplies. As combat casualty care has improved over the years, "died of wounds" has decreased from 32% in the United States Civil War 1861-1865, to 4.6% in the United States' experience in the Middle East 2001-2009 (Eastridge et al., 2011).

Physiologic incapacitation may be achieved by two primary physiologic mechanisms - central nervous system (CNS) wounds (brain or spinal cord) or excessive blood loss. Parenthetically, it should be noted that armed encounters often cease for psychological reasons, although these are not readily predictable or quantifiable. Of the two primary causes of physiologic incapacitation (CNS injury and exsanguination), fully 80% of potentially survivable wounds that resulted in death were attributable to excessive hemorrhage in a large series treated by the United States Military 2001-2009. The vast majority of non-survivable wounds in the series were neurologic in nature (Kotwal et al., 2016).

Incapacitation from Central Nervous System Wounds

When lethal force is necessary, the sooner the violent opponent is incapacitated, the less likely they are to harm friendly personnel or innocent civilians. Injury

to the brain and spinal cord represents the most rapid means of incapacitation in defensive encounters, whether military or civilian. Although survival is well demonstrated in a subset of cranial/brain gunshot wounds, the vast majority of individuals with penetrating wounds to the brain become rapidly combat ineffective by death or neurologic impairment (Fathalla et al., 2018).

Spinal cord injury from penetration is a distinct manner of incapacitation. Although injuries below the cervical region may technically allow continued activity with the upper extremities, the vast majority of individuals are rendered combat ineffective (Furlan et al., 2018).

Incapacitation from Blood Loss

As is well reviewed in the literature, rapid blood loss of 15% of estimated blood volume leads to an increase in heart rate, but blood pressure and perfusion remain stable in healthy individuals (Eastridge et al., 2019a). Volume loss of 15-30% leads to increased pulse and respiration rate, but systolic blood pressure remains stable. Blood loss >30% often leads to decreased cerebral perfusion pressure, loss of mental acuity, and cessation of physical capabilities. A systolic pressure <70 mmHg will not support continued activity in combat (Eastridge et al., 2019b).

As noted above, 80% of soldiers who died of wounds in a military review succumbed to massive blood loss. Injuries to the torso accounted for 48% of such wounds, extremity wounds 31%, and junctional areas (limited or no tourniquet access) of the neck, axilla, or groin in 21%. The anatomic distribution of wounds varies between military and civilian events, given the common use of protective body armor in combat zones. Penetrating wounds in military personnel now occur more frequently in the relatively unprotected areas of the abdomen, extremities, and maxillofacial areas (Smith et al., 2016a).

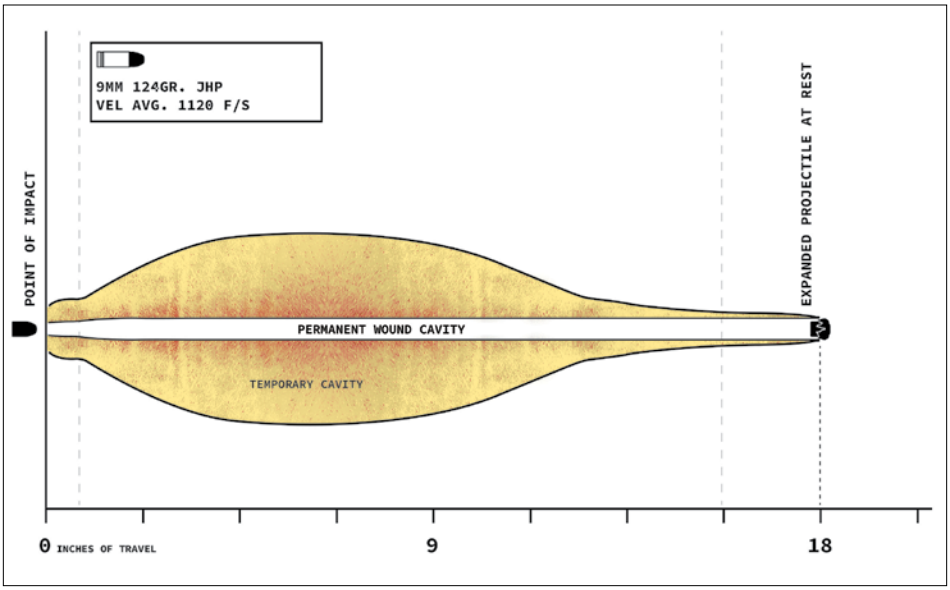

Figure 1: Permanent Wound Cavity (Handgun Type)

The permanent wound cavity (PWC) is an area of tissue "crush" the size of the surface area of the transiting projectile (e.g., 9mm, .40 cal., .45 cal., etc.), which contacts tissue. The temporary cavity (TC) represents the radial stretch in surrounding tissue caused by the passing projectile. The size of the TC varies with the size of the projectile, the amount of velocity loss, and the elasticity of the tissue (e.g., liver, lung, bone, etc.). Temporary cavities caused by handgun bullets are usually low-velocity impacts and are typically considerably smaller than those produced by a high-velocity rifle projectile that upsets tissue. The temporary cavity in handgun wounds may change the surgical issues in care, but immediate incapacitation rates may not change substantially. Permanent cavity effects are consistently based on what anatomic structures the bullet disrupts and the severity of the tissue damage.

BASIC PARAMETERS OF PROJECTILE INJURIES

The projectile (be it a bullet, fragment, arrow, etc.) travels from the weapon to the target guided by the very reproducible principles of external ballistics. Various factors such as wind, temperature, altitude, etc., will affect the projectile's travel through the atmosphere. The ability (i.e., efficiency) of the projectile to travel through the air is inherent to the aerodynamic design of the projectile. Modern bullets are specifically engineered to be relatively efficient in their travel through the air, while fragments from explosive devices tend to have less efficient aerodynamic architecture (Litz, 2014a).

For long-range weapons (>800 meters to target), the external ballistics can be critical for accuracy. For handguns, where the distance to the target is generally inside of 10 meters, external ballistics is of much less significance (Penn-Barwell & Helliker, 2017).

Terminal ballistics comes into play the moment the projectile strikes an object, including biologic tissue. All projectiles that penetrate the body can only disrupt tissue by these two wounding mechanisms: the localized crushing of tissue in the bullet's path and the transient stretching of tissue adjacent to the wound track. The damage caused by penetrating wounds is a complex interplay of physics, physiology, and anatomy, and like all events involving variable biologic tissue, it can be unpredictable.

These two primary wounding mechanisms predominate in terminal ballistics and, therefore, greatly influence the likelihood of physiologic incapacitation (Fackler, 1998):

A. **The Permanent Wound Cavity (PWC)** = an area of "crush" injury caused by direct contact with the projectile as it passes through tissue. It is proportional to the surface area of the projectile which contacts tissue.

B. **The Temporary Cavity (TC)** = the surrounding umbrella of tissue that briefly stretches elastically around the PWC creating an area of blunt trauma. The size of the TC is influenced by multiple variables involving both the projectile and the tissue impacted.

Projectile wounds differ in the amount and location of crushed and stretched tissue. The relative contribution by each of these mechanisms to any wound depends on the physical characteristics of the projectile, its size, weight, shape, construction and velocity, penetration depth, and the type of tissue with which the projectile interacts. Unlike rifle bullets, handgun bullets regardless of whether they are fired from pistols or shoulder-fired weapons, generally only disrupt tissue by the crush mechanism. In addition, temporary cavitation from most handgun bullets does not reliably damage tissue and is not usually a significant mechanism of wounding.

Permanent Wound Cavity (PWC) (Figures 1, 2).

The permanent wound cavity is directly proportional to the size of the projectile (9mm, .45 cal., etc.). The larger the caliber, the larger the PWC (Hollerman et al., 1990). The assumption has been made over many decades "the bigger the hole, the bigger the damage." While this is true on a grand scale (e.g., a 5mm projectile vs. a 20mm projectile), smaller differences (9mm vs. 10mm) may have less clinical significance. As will be reviewed, the caliber (bore/projectile diameter) of the projectile is only one factor in the dynamic interaction of the projectile with biologic tissue.

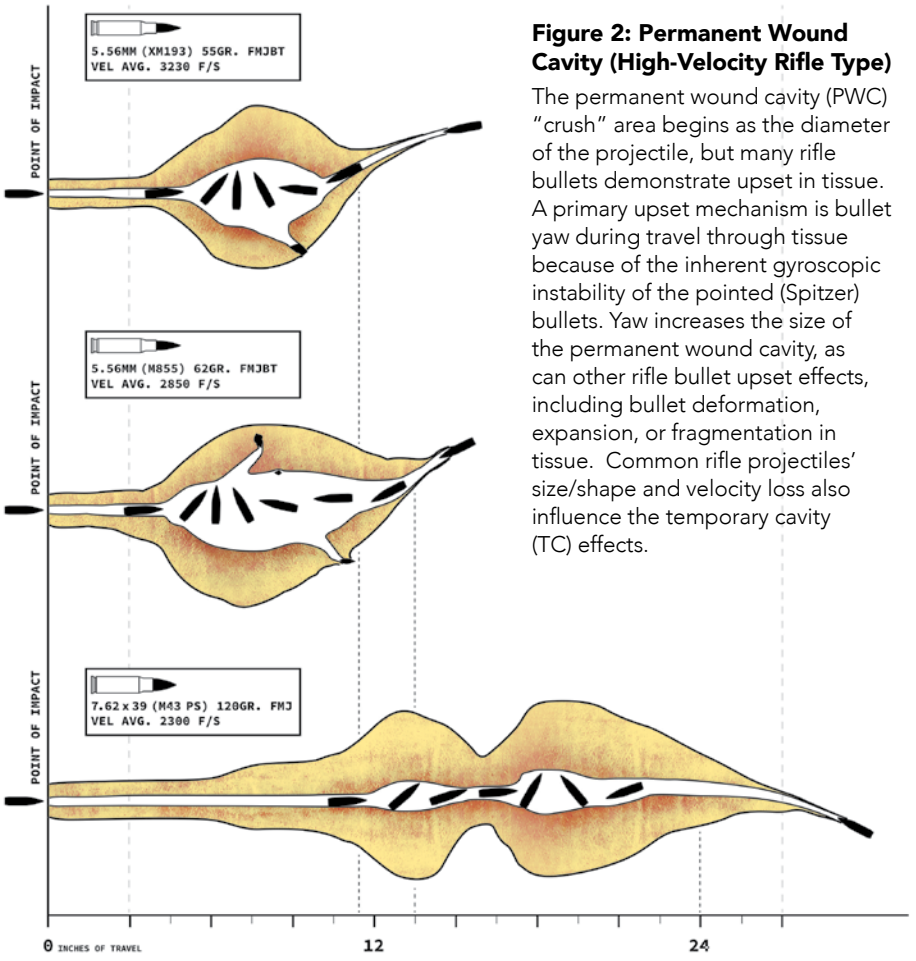

Figure 2: Permanent Wound Cavity (High-Velocity Rifle Type)
The permanent wound cavity (PWC) "crush" area begins as the diameter of the projectile, but many rifle bullets demonstrate upset in tissue. A primary upset mechanism is bullet yaw during travel through tissue because of the inherent gyroscopic instability of the pointed (Spitzer) bullets. Yaw increases the size of the permanent wound cavity, as can other rifle bullet upset effects, including bullet deformation, expansion, or fragmentation in tissue. Common rifle projectiles' size/shape and velocity loss also influence the temporary cavity (TC) effects.

The initial tissue damage incurred with a projectile is approximately the diameter of the entering projectile but may change if the projectile upsets through deformation, yaw, or fragmentation; the tunnel of the PWC damage will continue to the final depth of penetration of the projectile. The "crush" damage incurred to the tissue is an anatomic consideration (Figure 3). The rapidity of incapacitation will depend on the organ and tissues injured by the PWC. The more vital the organ/tissue destroyed in the PWC, the greater the physiological impact on wounding and survival (Belmont et al., 2012).

Temporary Cavity

The temporary cavity also called a "stretch cavity," is due to the projectile size, bullet upset, and velocity loss while traveling through the tissue (Hollerman et al., 1990b). Bullet design is a delicate "dance" of weight, velocity, and construction features.

Handguns generally have relatively low-velocity projectiles compared to rifle bullets. This is the main reason temporary cavity injury is not as significant a feature of handgun bullets but is a notable feature of rifle bullet injuries (Figure 2).

Historic rifle bullets were larger caliber spherical balls or conical projectiles. In the early 1900s, most rifle bullet designs transitioned to the Spitzer bullet (smaller diameter, longer projectile with a pointed tip). The base of this type of bullet is heavier than the tip and the center of gravity is, therefore, nearer the base. Bullets are stabilized by rifling

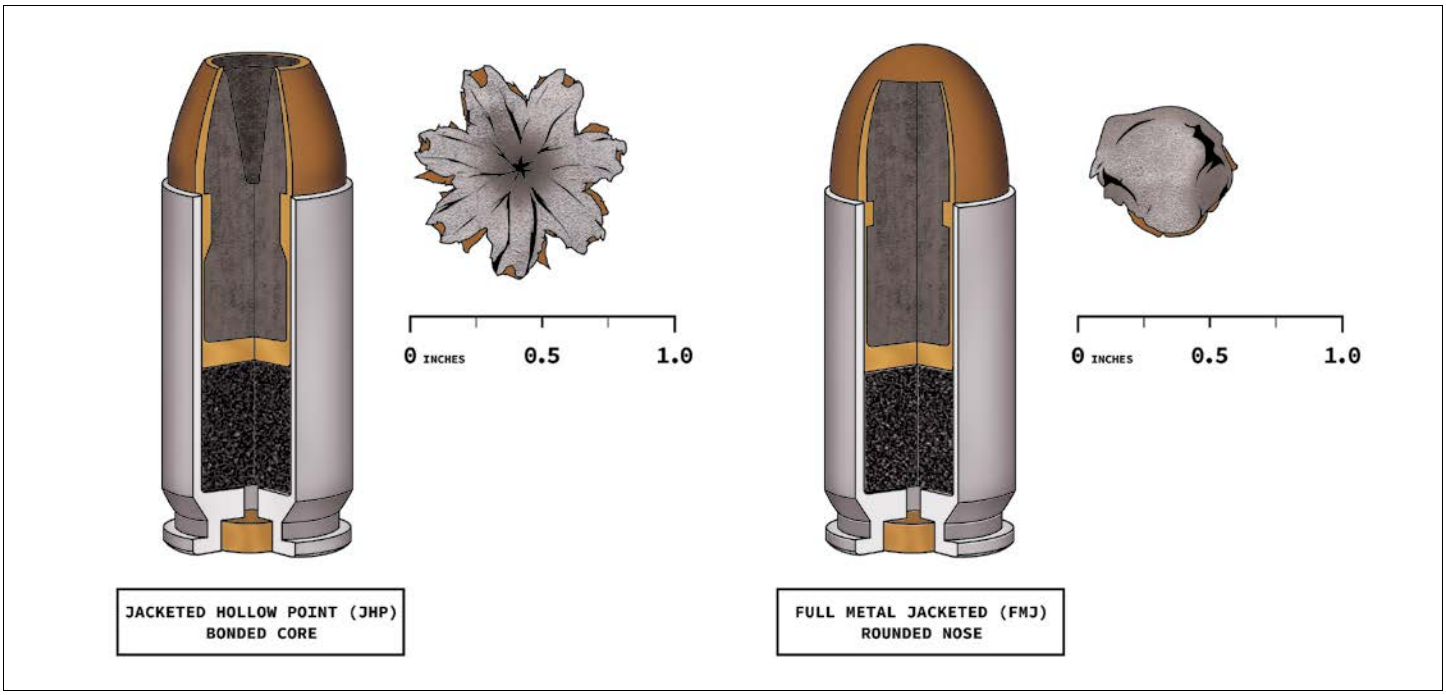

Figure 3: Representation of two variant handgun rounds (9mm)

Representation of two variant handgun rounds (9mm). Full metal jacket handgun bullets (FMJ) generally pass through tissue without significant deformation or expansion. The permanent wound cavity will be approximately the size of the FMJ bullet (9mm) in this example. The jacketed hollow point (JHP) deforms and expands as it passes through tissue, increasing the size of the PWC. Although the projectile expansion does retard velocity, handgun levels of velocity do not likely increase incapacitation significantly.

(lands and grooves) in the barrel. The spin created by a combination of rate of twist and velocity provides stability as the bullet flies through the air (external ballistics). When the bullet strikes the target tissue (much denser than air), the bullet destabilizes, eventually leading to bullet "yaw." This influences PWC and TC size (Figure 2) (Sellier & Kneubuehl, 1994a). Bullet design determines where (at what depth of penetration) the bullet yaws, and hence, where the TC is maximal.

The damage incurred by involved tissues is correlated with the elasticity of the tissue. Brain, liver, spleen, etc., are very limited in their elastic capability. Bowel, lung, and similar tissues tolerate the stretch cavity better and may have more viable tissue in the temporary cavity. Although the physiologic impact of TC on incapacitation is difficult to quantify, it has a definite impact on post-wounding surgical care due to organ damage (Cardi et al., 2019).

Fatal wounds in civilian gunshot scenarios have a preponderance (58%) of head and chest wounds (Smith et al., 2016b). Of note, handgun ballistic effectiveness is largely based on the permanent wound cavity, given the bullet's lesser velocity, size, and shape (muzzle velocities generally less than 2000 ft./sec.) and the resultant smaller temporary cavity (Rinker, 2005). Particularly in handgun injuries, the specific anatomic path of the PWC, and therefore the "crush" and severe damage, is critical in the level of incapacitation. The eventual clinical outcome depends on the type and importance of the anatomic tissue disrupted in the PWC. While tissue in the permanent cavity is generally destroyed and non-viable, tissue in the temporary cavity is often only temporarily injured, depending on the severity of the "stretch" and the elasticity of the tissue involved (Sellier & Kneubuehl, 1994).

Two common varieties of bullets are the full metal jacket (FMJ) and the jacketed hollow point (JHP) (Figure 3). Full metal jacket bullets tend to pass through tissue with limited deformation, leaving a PWC of tissue damage roughly the diameter and/or length of the bullet passing through the area. Because of the diameter to length ratio and less gyroscopically balanced architecture, full metal jacket rifle bullets will yaw in their travel through tissue, thereby markedly increasing the size of the PWC. The bullet design, launch stability, and impact attitude will determine how deep the bullet will yaw in the tissue. This characteristic is important in the potential damage caused by various bullet designs. A bullet that yaws while passing through vital tissue will increase both the PWC and TC in that tissue and cause increased damage, as opposed to a bullet that remains traveling point forward and does not yaw in tissue (Figure 2).

Jacketed hollow-point bullets (JHP) are designed to deform, expand, fan

open, or "mushroom" to increase the bullet diameter as it traverses tissue. Not only does this increase the PWC diameter, but it also increases velocity degradation per unit time as the projectile travels through tissue, thus resulting in decreased total penetration depth. The well-known analogy of slapping the hand on water versus slicing the water with the edge of the hand is an appropriate example. This decreased total tissue penetration depth can reduce the likelihood of a bullet exiting the intended target, thus limiting the danger to innocent bystanders downrange; this is why most law enforcement agencies mandate the use of bullets designed to expand. It is important to emphasize that the PWC is the primary determinate of low-velocity projectile injury and is why handgun wounds do not have such a physiologically relevant TC; conversely, the TC of rifle wounds frequently causes true permanent tissue damage.

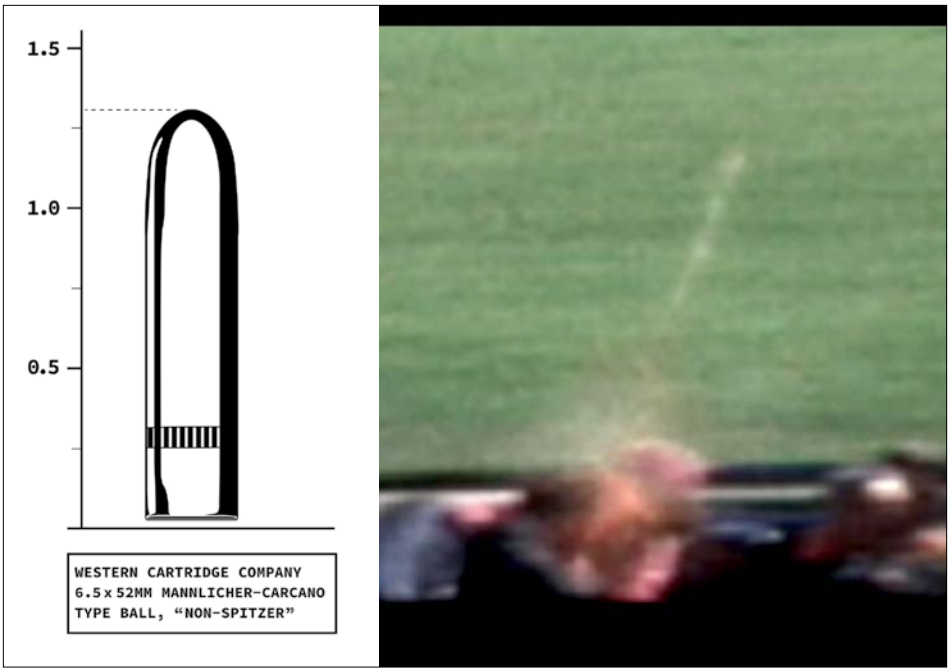

Figure 4: Still image from Zapruder film taken the moment of cranial impact on President John F. Kennedy.

A still image from the Zapruder film taken the moment of cranial impact on President John F. Kennedy. The blurring surrounding the cranium represents the explosive tissue effect created by the large temporary cavity associated with rifle bullets (6.5mm x 52mm) in this case and non-elastic tissue. Note the skull projectile is rising in a superior oblique path as the skull fractures with the TC typical of non-elastic brain tissue.

Illustrative Historic Examples (Figures 4, 5)

President John F. Kennedy was assassinated on 22 November 1963. His wounds were localized to the head and neck (Haag, 2019a). There has been longstanding controversy regarding his wounds, but abundant forensic literature favors the following (Levy, 2004):

a) The weapon used was a 6.5mm x52mm Carcano Italian bolt action rifle. The bullet was round-nosed (not a pointed Spitzer bullet) of 160 grains weight typical for this weapon. The muzzle velocity was approximately 2300 ft./sec.

b) The first round appears to have missed and struck the nearby curb (possibly deviated by impact with either the street light in the path or an oak tree branch). The first round to strike the President was the second shot. The impact was just right paramedian and inferior to the C7 transverse process. The bullet traveled through the soft tissues of the neck, exiting the trachea. The bullet penetrated the lateral right chest wall of Governor John Connally, who was sitting in a jump seat, situated in front of the President. The bullet exited the anterior chest, pierced the wrist (on the leg holding a Stetson cowboy hat), and ended in superficial tissue of the quadriceps.

c) The second impact on the President was right of midline, approximately 7 cm superior to the external occipital protuberance. As evidenced by the Zapruder reel taken of the shooting, the President's head was flexed at this point, the bullet traveling in an upward path to exit the right frontal plate (Bugliosi, 2007a).

A number of interesting ballistic details emerged from the event:

a) Bullet wound #1: The bullet was a relatively older design round-nosed 6.5mm x 52mm Carcano rather than the modern Spitzer pointed bullet. Therefore, the center of gravity of the bullet is more central, and the projectile is inherently more stable on impact. It is not uncommon for this design to penetrate deeply (>20 inches) before yaw(Bugliosi, 2007b). For this reason, the damage in the neck was primarily PWC with a less temporary cavity. A less balanced or expanding Spitzer bullet may well have had an earlier and more damaging temporary cavity. It also accounts for the small exit wound in the ventral neck of approximately 7mm, which correlates well with the bullet diameter (Haag, 2019b). This could easily be misconstrued as an entry wound.

b) The cranial wound is a typical rifle high-velocity wound to the relatively non-elastic tissue of the brain (Figure 4). The bullet first had to penetrate the skull barrier. This slows

Bullet design, velocity, mass, and the type of tissue impacted, coupled with that tissue's role in moment-to-moment function, determine the nature and clinical outcome of the wounds.

the bullet and changes flight/tissue interaction. The vast temporary cavity with the brain expanding rapidly damages the extensive brain throughout the intracranial compartment. Incapacitation was immediate.

Lee Harvey Oswald was arrested approximately two hours later. His arrest was in response to the murder of a Dallas police officer (J.D. Tippit). For the next approximate 48 hours, Oswald was retained in the Dallas City Jail. The decision was made to move him to more secure quarters, and he was brought through the underground garage to an awaiting armored car. During that brief walk, he was shot by a local tavern owner, Jack Ruby. Unlike the President, Oswald was shot with a handgun (Colt .38 cal. revolver). The muzzle velocity of this bullet was approximately 800 ft./sec. This is a fraction of the overall capability of the rifle round that struck President John F. Kennedy.

As shown in (Figure 5), the bullet path made a permanent wound tract through a series of vital structures, including the aorta, vena cava, and associated vasculature. The stomach wound would not cause early incapacitation, but the massive blood loss from arterial and venous major vessels led to rapid exsanguination. Oswald was obtunded, profoundly hypotensive, and in extremis on arrival at Parkland Hospital. He received over 12 units of blood and underwent emergent surgery before expiring. Although the .38 caliber full-metal jacket bullet from a 2-inch barrel revolver is at the lower end of ballistic effectiveness, relying on a PWC with little consequential temporary cavity, the sheer anatomic path and critical structures determined the outcome, as is generally the case, particularly with handgun wounds (Fackler, 1987).

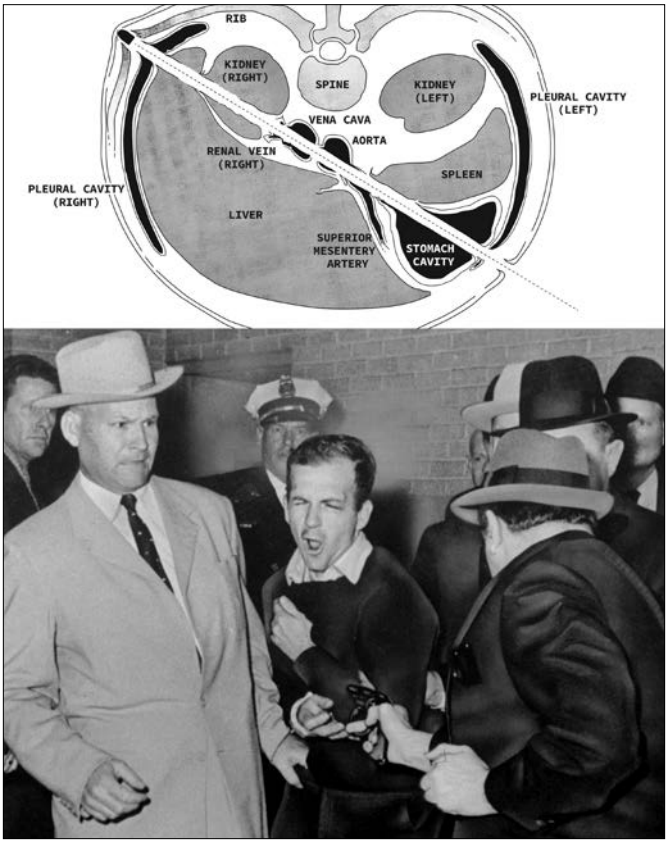

Figure 5: Bullet path that proved fatal for Lee Harvey Oswald. Moment of bullet impact as Jack Ruby shoots J.F.K. assassin Lee Harvey Oswald. Image at the moment of bullet impact as Jack Ruby shoots J.F.K. assassin Lee Harvey Oswald. Unlike the high velocity, large TC head wound in President Kennedy is a "classic" example of a relatively low velocity .38 caliber handgun round. The bullet passed through critical anatomic structures leading to rapid exsanguination. Although the TC with a .38 caliber handgun bullet would be modest, the PWC passed through an anatomic path that proved rapidly fatal.

SUMMARY

Terminal ballistics is a complex set of variables once the projectile impacts barriers, tissue, or both. The transition from the predictable laws of physics (external ballistics) as the projectile travels through the air to the variability of biologic tissue makes the outcome unpredictable. Bullet design, velocity, mass, and the type of tissue impacted, coupled with that tissue's role in moment-to-moment function, determine the nature and clinical outcome of the wounds. The scientific study of terminal ballistics allows for a better understanding of weapon design, the medical care of wounds inflicted, and the legal implications of the wounds in survivors and non-survivors.

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REFERENCES

Belmont Jr, P. J., McCriskin, B. J., Sieg, R. N., Burks, R., & Schoenfeld, A. J. (2012). Combat wounds in Iraq and Afghanistan from 2005 to 2009. *Journal of Trauma and Acute Care Surgery, 73*(1), 3–12. https://doi.org/10.1097/ta.0b013e318250bfb4

Bugliosi, Vincent. (2007). Four Days in November. In *Reclaiming History: The assassination of President John F. Kennedy* (pp. 281-283, 289-291).W.W. Norton and Co.

Cardi, M., Ibrahim, K., Alizai, S. W., Mohammad, H., Garatti, M., Rainone, A., Di Marzo, F., La Torre, G., Paschetto, M., Carbonari, L., Mingarelli, V., Mingoli, A., Sica, G. S., & Sibio, S. (2019). Injury patterns and causes of death in 953 patients with penetrating abdominal war wounds

in a civilian independent non-governmental organization hospital in Lashkargah, Afghanistan. *World Journal of Emergency Surgery, 14*(1), 15. https://doi.org/10.1186/s13017-019-0272-z

Eastridge, B. J., Holcomb, J. B., & Shackelford, S. (2019). Outcomes of traumatic hemorrhagic shock and the epidemiology of preventable death from injury. *Transfusion, 59*(S2), 1423–1428. https://doi.org/10.1111/trf.15161

Eastridge, B. J., Hardin, M., Cantrell, J., Oetjen-Gerdes, L., Zubko, T., Mallak, C., Wade, C. E., Simmons, J., Mace, J., Mabry, R., Bolenbaucher, R., & Blackbourne, L. H. (2011). Died of wounds on the battlefield: Causation and implications for improving combat casualty care. *Journal of Trauma: Injury, Infection & Critical Care, 71*(1). https://doi.org/10.1097/ta.0b013e318221147b

Fackler, M. L. (1998). Civilian gunshot wounds and ballistics: dispelling the myths. *Emergency Medicine Clinics of North America, 16*(1), 17–28. https://doi.org/10.1016/s0733-8627(05)70346-1

Fackler M. (1987) Physics of missile injuries. In: Evaluation and management of trauma. (pp. 25-41). Appleton-Century-Crofts.

Fathalla, H., Ashry, A., & El-Fiki, A. (2018). Managing military penetrating brain injuries in the war zone: lessons learned. *Neurosurgical Focus, 45*(6), 1–8. https://doi.org/10.3171/2018.8.focus18371

Furlan, J. C., Gulasingam, S., & Craven, B. C. (2018). Epidemiology of war-related spinal cord injury among combatants: A systematic review. *Global Spine Journal, 9*(5), 545–558. https://doi.org/10.1177/2192568218776914

Garfield, R. M., & Neugut, A.I. (1991). Epidemiologic analysis of warfare. A historical review. *JAMA: The Journal of the American Medical Association, 266*(5), 688–692.

Goldberg, M. S. (2010). Death and injury rates of U.S. military personnel in Iraq. *Military Medicine, 175*(4), 220–226. https://doi.org/10.7205/milmed-d-09-00130

Haag, L. C. (2019). The unique and misunderstood wound ballistics in the John F. Kennedy assassination. *American Journal of Forensic Medicine & Pathology, 40*(4), 336–346. https://doi.org/10.1097/paf.0000000000000510

Hollerman, J. J., Fackler, M. L., Coldwell, D. M., & Ben-Menachem, Y. (1990). Gunshot wounds: 1. Bullets, ballistics, and mechanisms of injury. *American Journal of Roentgenology, 155*(4), 685–690. https://doi.org/10.2214/ajr.155.4.2119095

Kotwal, R. S., Howard, J. T., Orman, J. A., Tarpey, B. W., Bailey, J. A., Champion, H. R., Mabry, R. L., Holcomb, J. B., & Gross, K. R. (2016). The effect of a golden hour policy on the morbidity and mortality of combat casualties. *JAMA Surgery, 151*(1), 15-24. https://doi.org/10.1001/jamasurg.2015.3104

Levy, M. L., Sullivan, D., Faccio, R., & Grossman, R. G. (2004). A neuroforensic analysis of the wounds of President John F. Kennedy: Part 2—study of the available evidence, eyewitness correlations, analysis and conclusions. *Neurosurgery, 54*(6), 1298–1312. https://doi.org/10.1227/01.neu.0000125870.74214.6c

Litz, B. (2014). Modern advancements in long range shooting. Vol. 1. 159-177. *Cedar Springs,(MI): Applied Ballistics, LLC*

Penn-Barwell, J. Helliker, A.E. (2017). Firearms and bullets. In *Ballistics trauma: A practical guide* (4th ed., pp. 7-20). Springer International Publishing

Prat, N. J., Daban, J.-L., Voiglio, E. J., & Rongieras, F. (2017). Wound ballistics and blast injuries. *Journal of Visceral Surgery, 154*, S9-S12. https://doi.org/10.1016/j.jviscsurg.2017.07.005

Rinker, R.A. (2005). Understanding firearm ballistics. *Basic to advanced ballistics simplified, illustrated & explained* (6th ed.). Mulberry House Publishing.

Sellier, K., & Kneubuehl, B. (1994). *Wound ballistics and the scientific background.* (pp. 215-237). Elsevier Publishing.

Smith, E. R., Shapiro, G., & Sarani, B. (2016). The profile of wounding in civilian public mass shooting fatalities. *Journal of Trauma and Acute Care Surgery, 81*(1), 86-92. https://doi.org/10.1097/ta.0000000000001031

Van Creveld, M. (2017). *More on war.* Oxford University Press.

Walker, J. J., Kelly, J. F., McCriskin, B. J., Bader, J. O., & Schoenfeld, A. J. (2012). Combat-related gunshot wounds in the United States military: 2000–2009 (cohort study). *International Journal of Surgery, 10*(3), 140–143. https://doi.org/10.1016/j.ijsu.2012.01.005

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The Medical Standard of Care:

A Pot Of Gold at the End of the Rainbow and Other Myths

Peter I. Bergé, JD, MPA, PA-C Emeritus

Keywords: Standard of care, medical malpractice, learned treatise, expert testimony, expert witness, medicolegal

The medical standard of care (SOC) is the critical element in most professional malpractice cases. While many attorneys and medicolegal professionals tend to think of the SOC as a well-defined term and seek to present irrefutable proofs of a SOC that will make certain that the party on whose behalf they are working will prevail, the concept of the SOC is surprisingly amorphous, and the ultimate judge of the definition and nature of the SOC is usually a group of the people who are least qualified to make that decision. Readers will decide if the definitive SOC exists and, if so, where to find it.

WHAT IS THE STANDARD OF CARE?

"Dr. Schmoe deviated from the standard of care when she ordered two milligrams of epinephrine to be administered by injection to the plaintiff, who presented to the emergency department complaining of a mild rash."

This statement, familiar in form to most readers here, is derived from a medical malpractice claim settled without the necessity of filing a suit. The claimant was a healthy, vigorous male in his 30s who suffered a myocardial infarction as a result of the epinephrine overdose (as documented by the hospital's cardiologist). In addition to the overdose, he also alleged that the nurse deviated from the SOC, not only by failing to question the order for the four- or five-fold overdose but also by deciding on her own to give that megadose intravenously. That was not a case that would inspire much controversy as

to its merit. But before moving on too quickly, what is the "standard of care" (SOC) that's referred to in the context of medical malpractice claims? What does the phrase mean?

Some years ago, I decided to search for the universal definition of the SOC, a quest for which took me over the river and through the woods, but (to brazenly mix metaphors) never led me to the pot of gold at the end of the rainbow.

Why is such a ubiquitous concept so hard to define? I'll give some examples.

> By undertaking professional service to a patient, a physician and surgeon represents that he has the necessary degree of skill and learning to do so. That degree of skill and learning is generally measured by the skill and learning possessed by other physicians and surgeons in good standing practicing in similar localities under similar circumstances.
>
> *Aasheim v. Humberger, 215 Mont. 127, 129, 695 P.2d 824, 826, 1985*

Aside from the old-fashioned gender reference, this definition starts off well and then runs into complications. What does "in good standing" mean in this context, and what does it have to do with the SOC? Do we expect something different from professionals who are not in good standing? The other troubling phrase is "practicing in similar localities." The concept of a community standard of care (known as the locality rule) is generally outmoded, although as of 2020, six jurisdictions had some sort of locality rule (Arizona, California, Idaho, Illinois, Louisiana, Tennessee). The theory is that there would be a different SOC depending on where, geographically, the practice occurred, and only medical experts familiar with those standards (or even practicing in the locality) would be permitted to testify as to that SOC. Today, medical knowledge is national (or even international), as are important medical journals, texts, and studies. The phrase "under similar circumstances" comes close to the universal application, at least in concept. For instance, the level of care expected in a critical access hospital with an ED staffed by a single provider would be different from that of a regional trauma center or tertiary care hospital.

> The prevailing professional standard of care for a given health care provider shall be that level of care, skill, and treatment which, in light of all relevant surrounding circumstances, is recognized as acceptable and appropriate by reasonably prudent similar health care providers.[ii]

This is a statutory definition from Florida. The first phrase, "the prevailing professional standard of care," is both somewhat circular and redundant. Each party will seek to prove that a different SOC is "prevailing." Similarly, the question of what is "recognized" is subject to debate. Then, consider the term "reasonably prudent." On its face, it is an oxymoron. Is there a level at which prudence becomes unreasonable? Once it does, I would argue that it is no longer prudent. Nonetheless, Florida's definition incorporates two nearly universal concepts: similar circumstances and the prudent, similar health care provider. "Similar health care provider" raises an additional question, discussion of which is worthy

The prevailing professional standard of care for a given health care provider shall be that level of care, skill, and treatment which, in light of all relevant surrounding circumstances, is recognized as acceptable and appropriate by reasonably prudent similar health care providers.

This activity is designed to augment the knowledge and skills of legal nurse consultants and assist in their understanding of the medical standard of care.

Upon completion of the learning activity the learner will be able to:

a. Define what the statement Standard of Care means
b. Identify where the LNC finds the standard of care for cases they may be involved in
c. Identify how the standard of care for a given case is established in litigation and how it is determined by the jury

The author, reviewers, and nurse planners all report no financial relationships that would pose a conflict of interest.

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of a separate article: are there different SOCs for different types of providers, e.g., physicians, physician associates, and advanced practice nurses?

> The standard of conduct that is required to meet the obligation of "due care" is based upon what the "reasonable practitioner" would do in like circumstances.[iii]

This is probably the closest that we will find to a universally accepted definition, in part due to its brevity and simplicity. It derives from the basic tort law concept that we all have a duty to exercise due care. An advantage of this definition is that it focuses on the "reasonable" practitioner while avoiding the term "average." The distinction between "average" and "reasonable" is highlighted by the holding in *Estate of Elkerson v. North Jersey Blood Center*, 342 N.J. Super. 219 (App. Div. 2001). In *Elkerson*, a claim was brought on behalf of a blood transfusion recipient who was infected with hepatitis B virus (HBV) in 1983 and ultimately died of cirrhosis of the liver. The suit alleged that the blood center was negligent in failing to use the available test for HBV core antibody as part of the screening process.

The defense presented testimony to the effect that the industry standard was to use the HBV surface antigen test but not to test for HBV core antibody. The trial court held that the customary "reasonable and prudent" negligence test did not apply since a blood bank should be considered to be a health care professional, and instead instructed the jury that since the defendant represented that it "possess[es] that degree of knowledge, skill and care which is possessed and used by the average Blood Bank" that "[t]he required knowledge, skill, and care must be judged by the standard practice of blood banking in April of 1983." Id at 228.

However, plaintiffs had presented testimony from an eminent expert who asserted not only that the HBV core antibody test had been available when the events in question occurred and that its use would likely have prevented transfusion of infected blood to the plaintiffs' decedent, but also that he had advised the blood bank industry to use the test prior to that time, and that the industry's failure to employ the test was unreasonable and negligent.

The New Jersey Appellate Division held that "[t]he standard is not what test the average member of the blood bank industry used to screen for the hepatitis B virus in 1983, but what test a reasonable blood bank *should* have used given reasonably available testing alternatives at the relevant time." (emphasis added) *Id* at 230. The court further observed that "[e]vidence of the custom or practice of a particular industry does not conclusively dispose of the issue of the proper standard of conduct…" *Id* at 229, citing *Wellenheider v. Rader*, 49 N.J. 1, 7, 227 A.2d 329 (1967). The *Elkerson* court neatly distinguished between the "average practitioner" standard, and the "reasonable practitioner" standard, pointing out that the former would allow for the majority of practitioners to behave unreasonably, as the majority of blood banks were doing in 1983. The case is worth reading in its entirety as an illuminating example of reasoning regarding this aspect of the SOC.

My search led me to accept that a universally accepted definition of the standard of care is found only in myth. Readers should familiarize themselves with the relevant case law, statutes, and customs in the jurisdictions where they practice, keeping in mind that the predominant definition of the SOC will vary from state to state, area to area, attorney to attorney, and from courtroom to courtroom.

The standard of conduct that is required to meet the obligation of "due care" is based upon what the "reasonable practitioner" would do in like circumstances.

WHERE IS THE STANDARD OF CARE FOUND?

Learned Treatises

Medicolegal consultants often look for a publication that definitively establishes the SOC. This may be a textbook (less commonly, as they are often out of date upon publication except in updated online versions), published standards, guidelines or recommendations, studies, review articles, manufacturer's instructions, course curricula, etc. In order to be admissible, such materials would have to fall under an exception to the hearsay rule. Under the Federal Rules of Evidence (FRE), R. 803, such publications would be considered "learned treatises."

> To the extent called to the attention of an expert witness upon cross-examination or relied upon by the expert witness in direct examination, statements contained in published treatises, periodicals, or pamphlets on a subject of history, medicine, or other science or art, established as a reliable authority by the testimony or admission of the witness or by other expert testimony or by judicial notice. If admitted, the statements may be read into evidence but may not be received as exhibits.

The central point is that those materials generally go before the jury only by means of validation through expert

testimony. While the FRE has not been adopted by all states, there is likely to be an equivalent rule in those states where they have not. Further, any expert can (and often will) testify that the learned treatise being proffered by the other side *does not* establish the standard of care. They may contradict assertions in the publication and point out that the "standard" held out as being definitive is really only a recommendation or does not apply precisely to the facts of the case. An expert may also present other publications, some appearing equally authoritative, which differ either subtly or starkly from the one offered by the adversary. The search for a publication that presents incontrovertible and unassailable evidence of the SOC is comparable to the quest for a living, breathing pair of unicorns.

Statute or regulation

To the extent that a given standard of care is set out in legislation or in regulations developed pursuant to legislation, it will strongly support the position of the party making that argument. Given that SOCs are often fact-sensitive, however, even statutes or regulations may not prove to be an infallible source. At a minimum, it is wise to research case law for decisions that support or contradict a given interpretation of a SOC found in statute or regulation.

Judicial notice

Under the doctrine of judicial notice, the court may accept as fact something that "is generally known within the trial court's territorial jurisdiction; or... can be accurately and readily determined from sources whose accuracy cannot reasonably be questioned." See FRE R. 202 and equivalent state evidence rules. In a civil case, the court may instruct the jury to accept the noticed fact as conclusive. Although it would be unusual, a court could take judicial notice, on its own initiative or at the request of a party, of a given standard of care.

Admissions

An admission by a party to the case may establish a given standard of care. This might occur by a direct admission, written or otherwise. If a defendant institution adopts a SOC in its policies and procedures, that adoption could be deemed to be an admission. An individual defendant, or a witness whose testimony binds a defendant, can also admit a standard of care through sworn

testimony. For example, in a case involving delayed diagnosis of colon cancer, a defendant internist admitted at deposition that the recommendations of the American Cancer Society for screening for colorectal cancer set the standard of care. Since the defendant had not followed those recommendations and the plaintiff lost the opportunity for early detection of colon cancer, the case was settled without the necessity of a trial.

An admission may also be obtained through a formal "request for admissions" under the rules of court. In that procedure, one party submits a request that the other party admits to a given standard of care. If there is no response within the time set out by the rules of court, the fact is deemed to be admitted at trial. The responding party also might (although usually will not) admit the proposed SOC.

Court: the end of the rainbow

When searching for pots of gold, the end of the rainbow is elusive since rainbows are an optical phenomenon that usually doesn't allow for the end to be located. The pot of gold represented by the standard of care, however, can reliably be found in court. Still, the elusiveness of the element remains because you may find a different pot of gold in every courtroom.

The SOC for a given case is invariably established in litigation, and with the exception of the examples already given, it is almost always determined by the people who have the least expertise in the matter: the jury. The mainstay of establishing the SOC at trial is expert testimony. Witnesses, qualified by the court as experts, testify as to the SOC according to their education and experience, and apply principles accepted in the professional community. Under some circumstances, that testimony is sufficient to establish the SOC. Depending on the rules of court/civil procedure and rules of evidence in the jurisdiction, the expert may be required to support the opinion with learned treatises that demonstrate generally accepted scientific information. If the opinion does not meet the requirements of the jurisdiction (a topic beyond the scope of this discussion), the court may bar that testimony. In any case, *the learned treatises by themselves do not establish the standard of care.* This is worth keeping in mind when searching for that "definitive" article or guideline, which may be nearly as difficult to find as a leprechaun lurking around the corner from the end of a rainbow.

For each expert opinion supported by venerable learned treatises, there is another expert who contradicts that of the first one and who may support that contrary view with impressive publications. All counsel will exhort the jury to believe that their experts are right, and the jury is usually left on its own to decide what the SOC really

was and if the defendants followed it. Even if the jury is directed by the court to accept a given standard of care, there is no way to predict if it will do so in its deliberations.

Given that it is the pivotal element in professional malpractice cases, the standard of care is remarkably elusive and ephemeral. The SOC that you painstakingly track down in your pre-suit research will likely not survive to see trial. The SOC presented to the jury, in this case, may not be the one that it accepts, and the SOC accepted by this jury will likely not apply to the next case, no matter how similar it may be. As rainbows disappear with the clouds, taking with them any mythical pots of gold, so does the SOC of each case. At the end of the trial, an SOC (whether that of the plaintiff, the defense, or both) will likely fade away, and the search for rainbows begins again for the next case.

REFERENCES

Aasheim v. Humberger, 215 Mont. 127, 129, 695 P.2d 824, 826, 1985

Boumil M, Clifford E, Bissonnette Moes D. Medical Liability, 2nd Ed., p. 25. Thomson West 2003

Estate of Elkerson v. North Jersey Blood Center, 342 N.J. Super. 219 (App. Div. 2001)

Federal Rules of Evidence (FRE), R. 202; R. 803

§ 766.102. Medical negligence; standards of recovery; expert witness., Fla. Stat. § 766.102 (Current through Chapters 1-177, part of 178, 179-224, part of 225, 226-240, part of 241, and 242-243 of the 2021 Regular Session and parts of 268-271 of the First Extraordinary Session.)

SYMPOSIUM: LAW AND THE NATION'S HEALTH: NOTE: "Trust Me, I'm a Doctor": Medical Malpractice as a Daubert-Free Zone, 108 Geo. L.J. 1761, 1778 (endnote 113)

Wellenheider v. Rader, 49 N.J. 1, 7, 227 A.2d 329 (1967)

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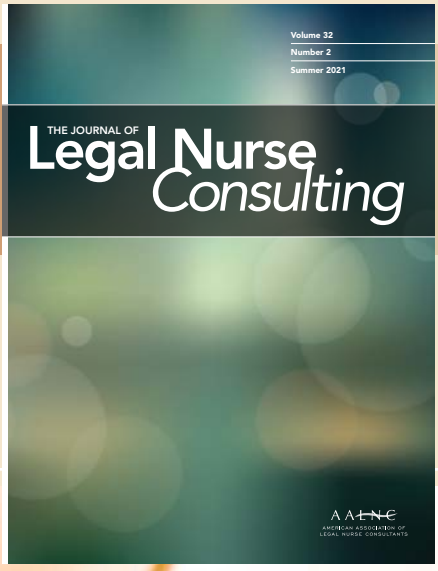

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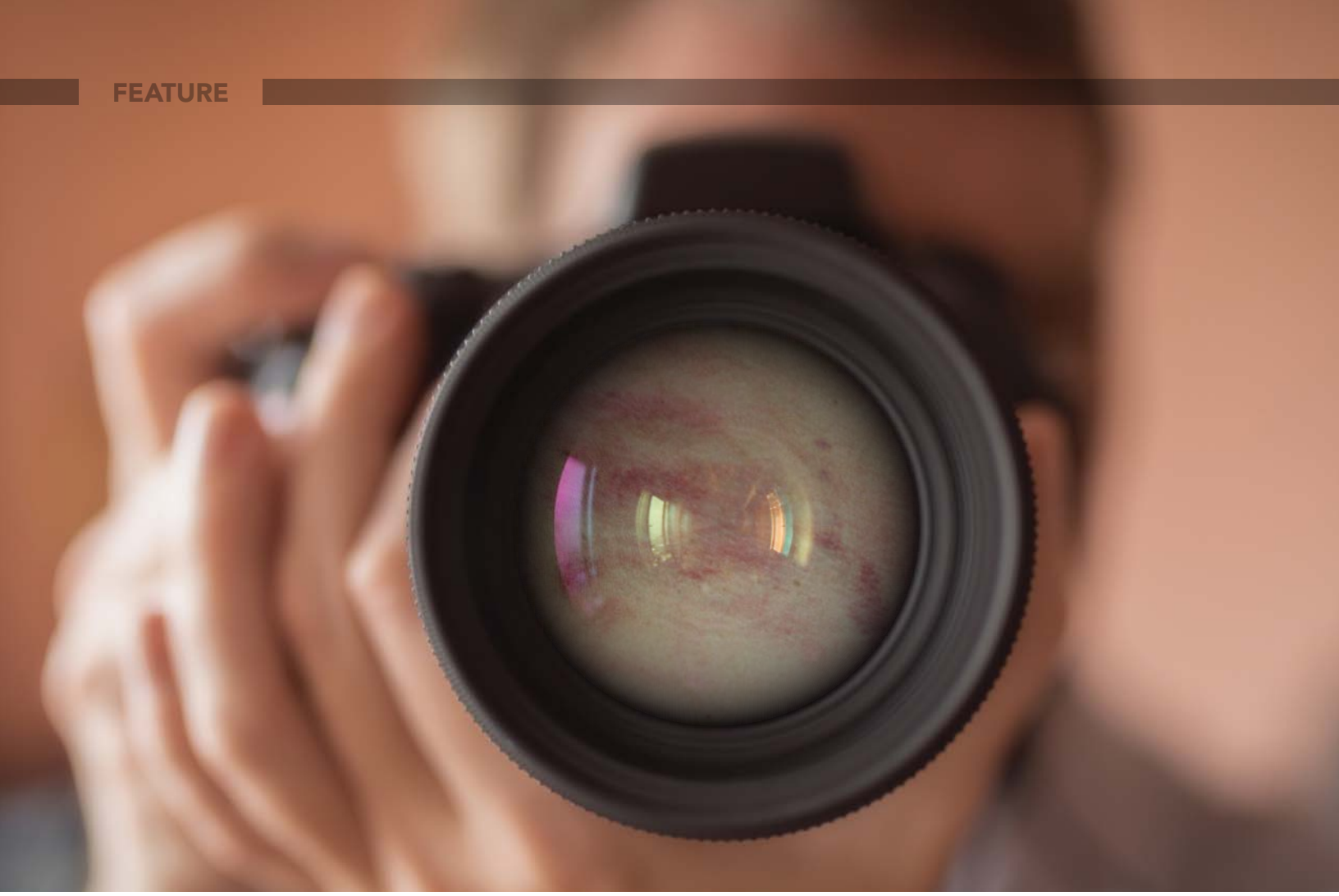

Best Practice Forensic Photo-Documentation:

Show me the injuries!

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Keywords: forensic photography, rule of thirds, photography skills, secure image storage

Forensic photography is a procedure that records the initial appearance of injury and physical evidence that can provide a permanent record for use in criminal and civil proceedings. This article will focus on basic forensic photography skills that should be utilized in the documentation of injuries for victims of sexual assault, intimate partner violence, child maltreatment, and elder abuse. Basic photography knowledge for the Legal Nurse Consultant should include that any photographs taken & utilized as evidence should be obtained with patient consent and the importance of secure storage of digital images in the healthcare environment. Examples of photography guidelines that reflect best practices are referenced to assist the LNC in the analysis of photographic evidence.

Photography or "drawing with the light" has a rich and complex history. Originally developed in the nineteenth century as a method that utilized a type of varnish and pewter plates, photographs of humans were documented initially in 1838 (Harting et al., 2015). The art and science of photography have been utilized to document and preserve a variety of subjects and important events over the last 200 years. When a photograph of a forged document was presented and allowed as courtroom evidence in 1851, the concept of photography as a forensic tool was recognized and evolved to be utilized in cases of identification and scene analysis (Sanders, 2016).

The use of photography in healthcare has enhanced the ways healthcare professionals document and deliver contemporary care and treatment. Photographic documentation as part of patient care is referred to in the literature by several terms including, clinical photography, medical photography, medical-legal photography, and forensic photo-documentation.

Photography has been widely used in a variety of clinical practice areas, including dermatology, wound & burn care, surgery, gynecology, pediatrics, emergency medicine, clinical education & research. Reasons for using a camera to address a variety of healthcare needs of patients seen in an acute care setting like an emergency department include:

1. Recording & documenting injuries & potential evidence that cannot be preserved indefinitely or may be altered by treatment or repair.
2. Acting as a future aid to memory.
3. To document features & details that may not be important for purposes of care & treatment. (e.g., condition of clothing worn by the patient)
4. To provide documentation of injuries or conditions & record appearance both before and after medical intervention(s).
5. To record the condition of evidence or injuries at the time of the examination.
6. To document normal findings or absence of injuries.
7. To document wound healing progress in follow-up examinations.
8. To provide a visual supplement to the medical record.
9. Teaching, peer review, and quality improvement.
10. Minimize bias.
11. Digital images can be stored indefinitely.
12. Images can be reviewed by consulting professionals prior to court proceedings.

(Primeau & Sheridan, 2013).

The use of photography in the medical forensic evaluation of patients who have been sexually assaulted or abused has been used for the last forty years, originally with a 35 mm camera attached to a colposcope and now with the use of a digital camera system. Photo-documentation of trauma and injury in patients who seek medical-forensic care secondary to acts of interpersonal violence and crime can be used as evidence in criminal or civil court proceedings. The Legal Nurse Consultant who is reviewing criminal cases of interpersonal violence should expect that documentation generated as part of a medical forensic examination includes narrative descriptions of injury, trauma grams and photography of normal anatomy and injury findings. Photographs are demonstrative evidence. Demonstrative evidence serves to illustrate, demonstrate, or help to explain oral testimony. Photographs are not likely to be admitted as evidence if there is no reference to images in the medical-forensic exam record, and they may not be admitted as evidence if the medical forensic exam record does not include narrative and diagrammatic documentation of specific injuries. The photographs or digital images and the medical-forensic record supplement and corroborate each other. (Pasqualone, 2011). Photography is a tool that can serve to augment nursing documenta-

Figure 1: Mid-range orientation picture showing bruises and abrasions on right lateral neck. The patient provided a history of strangulation.

Prior to taking photographs in the clinical area, the patient must provide consent both verbally and in writing. The consent form should include information on the type of photographs to be taken, who will have access to the photos, and how the images will be utilized, stored, and secured.

tion but does not substitute for accurate, detailed nursing documentation.

In addition to photographs, the medical forensic examination typically consists of four components, 1) Medical-forensic history. The history obtained as part of an evidentiary exam should be documented verbatim in quotes as relayed by the patient. The medical-forensic history informs diagnosis and treatment. 2) Head-to-toe physical examination to evaluate for body surface trauma. 3) Detailed genital assessment to assess for any genital injury or findings and 4) Collection of forensic evidence. The evidence collected can include samples from the patient's body for purposes of DNA analysis, as well as photographs that can document the normal anatomy or injury findings. Accurate photo documentation can also support expert testimony at the time of trial.

Prior to taking photographs in the clinical area, the patient must provide consent both verbally and in writing. The consent form should include information on the type of photographs to be taken, who will have access to the photos, and how the images will be utilized, stored, and secured. Facilities should also have current policies that guide forensic photographic documentation for all patients in need of a forensic healthcare response.

Figure 2: Forensic Nurse demonstrating ano-genital photo-documentation.

A standard approach to forensic photo-documentation of trauma and injury is referred to as the rule of threes, fours, or fives. An important initial image that should be included in photo-documentation of body surface trauma and injury should include patient-identifiable information such as the patient's hospital wristband, a computer-generated identification label, or a commercially prepared 'bookend card.' Bookend identification demonstrates the beginning and end of a series of photographs taken as part of the medical forensic examination. The bookend card should include the name of the patient, date of birth, date and time of the examination, healthcare provider name, credentials, and case number. The first photo should be a full-body photo of the front and back of the clothed patient to document the appearance of the patient, the condition of clothing worn at the time the criminal activity or episode of violence occurred, and any visible body surface injuries. If it has been several days since the episode of assault or abuse, and body surface injuries are not apparent, a single photo of the patient's face and upper body may be sufficient. Sequential photos of body surface wounds or injuries should be taken following this standard approach.

- **First image** should include the location of the injury or wound and be photographed at a distance that provides a view of anatomic orientation (far away).
- **Second image** is half the distance closer than the first image (mid-range).
- **Third image** is a close-up of the injury with a standard reference scale or ruler (close range).
- **Fourth image** is the same close-up of the wound without a scale.
- **Fifth image** is the closest image possible to capture the entire injury if needed.

(Faugno, Sievers, Shores, Smock, & Speck, 2020).

Following a trauma centered approach to the patient as part of the medical forensic exam, obtaining all consents to photograph and using a label or book-end cards with the patients' identifying demographic information, the steps in comprehensive anogenital photo-documentation should include,

- An overall 'orientation' photograph of the vulva illustrates the entire genital region from the mons to the anal area.
- Several photos of the vulvar anatomy, specifically the labia majora and labia minora, may need to be taken in 2-3 magnified images.
- Photos of the clitoris, clitoral hood, urethra, and periurethral areas.
- Magnified photos of the posterior fourchette & fossa navicularis. This is an area where a subtle injury is often seen after sexual assault or abuse and should be photographed prior to the use of various interventions like separation and traction, application of a cell stain like Toluidine Blue, or the insertion of a vaginal speculum.
- A photo of the estrogenized hymen tissue. In the child-bearing patient, an obstetric swab or air-filled urinary catheter balloon can be used to evaluate the circumference of the hymen tissue.
- Photos of the cervix, cervical os, and walls of the vagina can be taken during the pelvic exam and prior to the collection of any specimens.
- Photos of the anus and perianal areas.

Photos of genital injury or other findings should include several images at varying levels of magnification and should coincide with any genital diagrams that are used as part of the medical forensic documentation (Sievers & Faugno, 2020). The male patient seeking care and an evidentiary exam should be provided a standard medical forensic examination, utilizing best practice approaches to photo-documentation and trauma-informed care principles.

Additional photography may be included in a recheck or follow-up examination if new or different findings are noted on the patients' body following the initial examination. In addition to documenting emerging or evolving injuries, follow-up photographs can provide documentation of healing or resolving injuries and clarify findings of stable, normal anatomy or nonspecific findings like redness or swelling that could be confused with acute injuries (Office on Violence Against Women 2013).

The Legal Nurse Consultant reviewing a criminal case should also consider that the photographs taken as part of a medical-forensic examination may not be stored with the patient's medical record. The medical forensic document should indicate if photographs have been taken, but it is best practice if the forensic documentation and digital images are stored separately from the routine medical record. Healthcare facilities should have clear policies and protocols for the retention, release, and storage of forensic images. There are several ways a healthcare facility may store and secure this confidential information. Some examples include:

- A hospital network, where auto back up occurs-digital images can be stored on a terabyte hard drive system.
- A virtual drive where photos cannot be viewed unless a passphrase has been entered.
- A separate locked file in a facility Medical Records Department with a process for release to outside agencies via subpoena.
- A password-protected external hard drive (placed in a secure/locked location).

Although the photo-documentation of genital injury may serve as evidence in criminal or civil court proceedings, the public display of anogenital photographs in the courtroom or distribution to the jury is not necessary and may be perceived as graphic and inflammatory. An experienced forensic nurse as a testifying expert can provide demonstrative evidence that includes a simple black and white diagram of male or female genitalia while objectively describing the anatomy and identified injury or normal findings. A diagram of the genitalia can be drawn on a paper flip chart, or standardized, enlarged anatomic diagrams can serve as demonstrative evidence. The genital structures can be labeled, and any areas of injury documented with notations of color, size, and location on the genital anatomy. The benefit of providing this data on a simple diagram is that the jury can continue to view the diagram after the testifying expert has left the courtroom. The diagram can also be admitted as evidence, and the jury members may refer to the diagram during deliberation.

Photo documentation is an accepted standard of care and essential skill for healthcare professionals responding to patients affected by trauma and violence. Legal Nurse Consultants reviewing criminal and civil cases involving interpersonal violence and potential criminal activity should expect that documentation generated as part of a medical forensic examination contains detailed descriptions of injury, including photography of normal anatomy and identified injury findings.

REFERENCES

Faugno, D., & Sievers, V., (2020). Ano-Genital Photo-Documentation Guideline.

Faugno, D.K., Sievers, V., Shores, M., Smock, B. & Speck, P.M. (2020). Domestic violence and non-fatal strangulation assessment. STM Learning.

Harting, M.T., DeWees, J.M. Vela, K.M. & Khirallah, R.T. (2015). Medical photography: Current technology, evolving issues, and legal perspectives. *International Journal of Clinical Practice*. 69, 4, 401–409. doi: 10.1111/ijcp.12627

Office on Violence Against Women. (2013). A national protocol for sexual assault medical forensic examinations, adult/adolescents, second edition (NCJ 228119). U.S. Department of Justice

Pasqualone, G.A. (2011). Forensic photography. In V.A. Lynch and J. Barber Duval (Eds.) Forensic nursing science, (pp 61-79.). Elsevier.

Primeau, A. & Sheridan, D.J. (2013). Evidence: Forensic nursing care in the emergency & acute care departments. In R. Constantino, P.A.

Crane, S.E. Young, (Eds.) Forensic nursing: Evidence-based principles & practice, (3rd ed, pp.320-321.). F.A. Davis.

Sanders, R.C. (2016). History of forensic imaging. In E.M. Robinson, (Ed.) *Crime Scene Photography* (pp.1-25). Elsevier.

Sievers, V. & Faugno, D. (2020). Photo-documentation and the medical-forensic examination; If there is no picture, was there really injury? Evidence Technology Magazine, 18 (5).

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The authors have no known conflicts of interest to disclose.

President's Update *continued from page 4*

to support your growing business and avoid any "broken needle" moments. AALNC exists to inspire and empower you to reach your full potential as an LNC.

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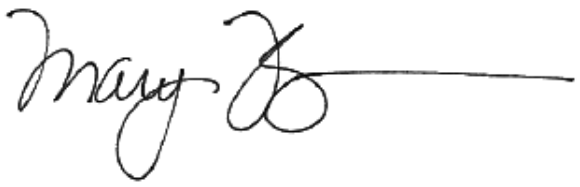
Joyous holidays and a happy, healthy New Year!



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XXXIII.3, Fall 2022 — Labor and Delivery/Peripartum

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