







Scene Investigation

-  Care should be taken not to disturb blood patterns on the floor or walls, as they may give indications as to the site of injury and the degree of activity of the decedent after injury.
-  The position and location of the firearm should be carefully noted, if present, and if the firearm loaded, is a round chambered, are fired rounds in the cylinder, is the weapon cocked is of primary importance.
- 



7

Scene Investigation

-  Care should be taken not to disturb blood patterns on the floor or walls, as they may give indications as to the site of injury and the degree of activity of the decedent after injury.
-  The position and location of the firearm should be carefully noted, if present, and if the firearm loaded, is a round chambered, are fired rounds in the cylinder, is the weapon cocked; is of primary importance.
-  Any projectile found beneath the decedent, stuck to clothing, or other areas should be photographed and recovered at that time to prevent the possibility of loss during transport.

8

Forensic Scene Investigation

-  If firearm primer residue sampling is desired, it may be collected at the scene, or the hands may be covered by paper (not plastic) bags before transport to prevent evidentiary loss during transport.
-  The presence of bullet strikes on the walls of a room should be noted, as these can serve as reference points for later reconstruction of the position of a shooter when combined with a trajectory through the body.

9

Aspects of Firearm Wounds

Medicolegal examination of firearm wounds may allow for determination of several aspects of these injuries.

Range of Fire



Type of Weapon

Trajectory

Extent of Injuries

10

Wound Types







Penetrating
An injury in which an object enters the body or structure and does not pass through (bullet still inside body)

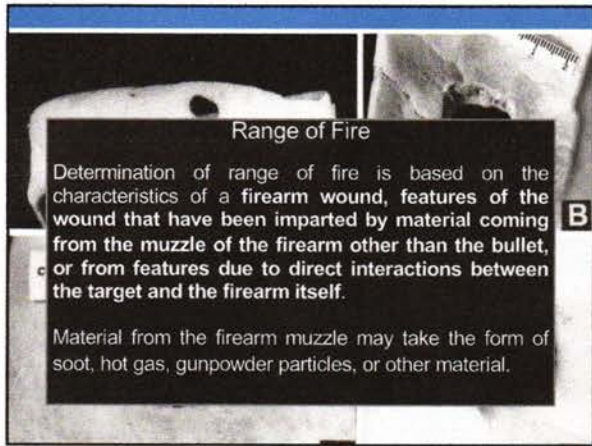
Perforating
An injury in which an object enters the body and passes all the way through (bullet at scene or in clothing)

11

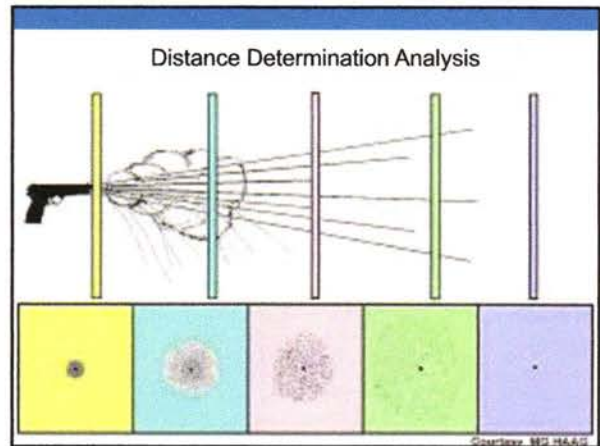
Range of fire, or muzzle to target distance, may be divided into

		
Contact (Close)	Intermediate	Distance
0 -12 inches	3-5 Feet	< 5 Feet

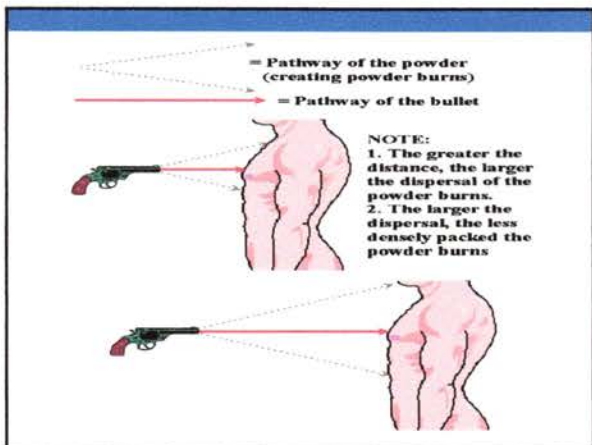
12



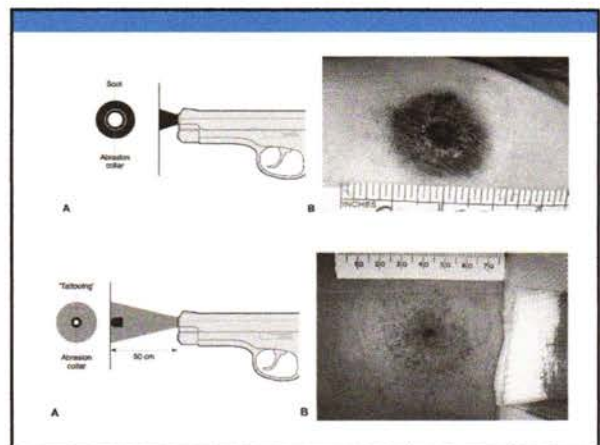
13



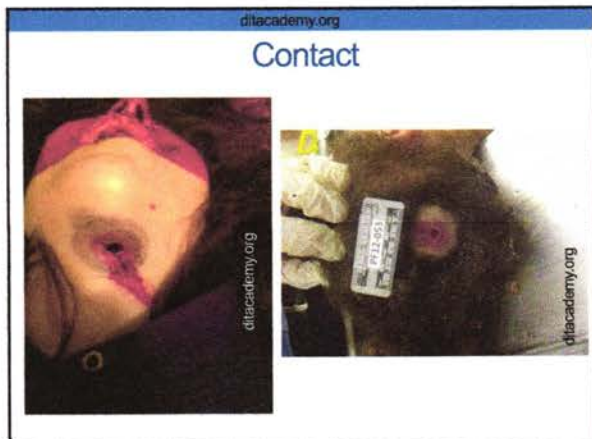
14



15



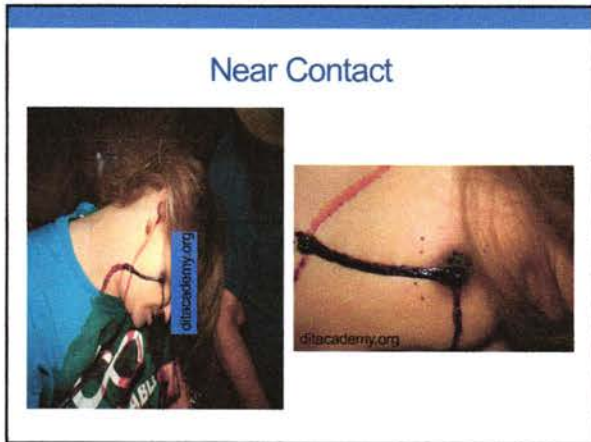
16



17



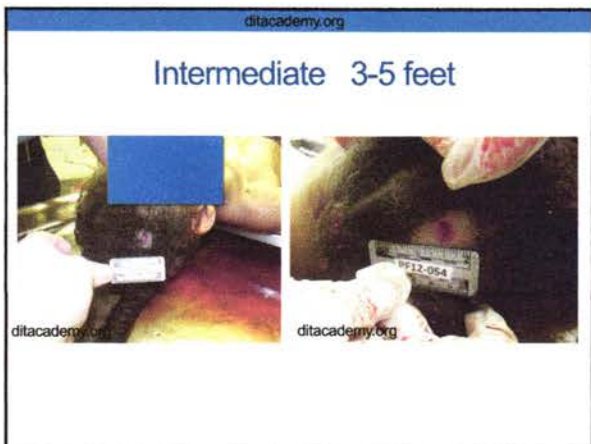
18



19



20



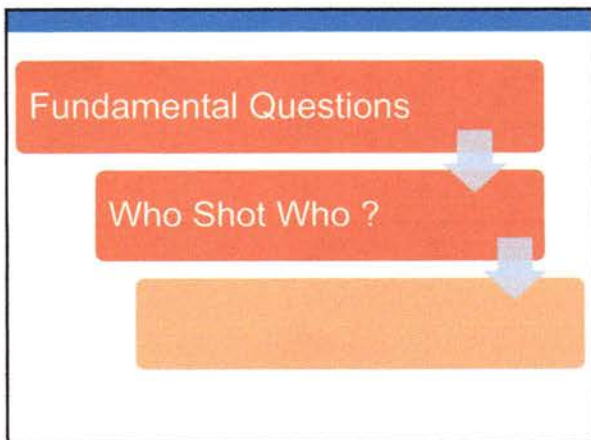
21

Why Range Info is Important

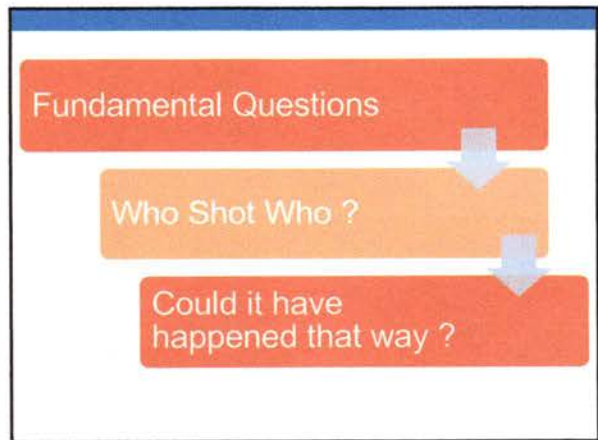
The range of fire has obvious relevance to such issues as whether a wound is self-inflicted or inflicted by another person, the truth of stated explanations of shooting events, and the validity of self-defense arguments.

Range of fire determination will answer two fundamental questions.

22




23



24

Type of Weapon Information From Wounds

The general type of weapon may sometimes be determined by the characteristics of a wound, and by the recovery of the projectile causing a wound, with appropriate analysis.



In other cases, only general characteristics such as the likely type or brand of the firearm may be determined, but these features are still useful. The importance and necessity of recovering retained projectiles should be understood, considering the potential wealth of information that may be gleaned from their examination.

25

Trajectory of a Projectile

Noun:
the path followed by a projectile flying or an object moving under the action of given forces.

26

Trajectory of Projectile

The trajectory, or direction, of a projectile through the body, may be approximated, but it must be kept in mind that this does not necessarily equate to the trajectory of the bullet through space.

Because the bodies of the victim and shooter are not static and may move about in 3 dimensions during a shooting event.

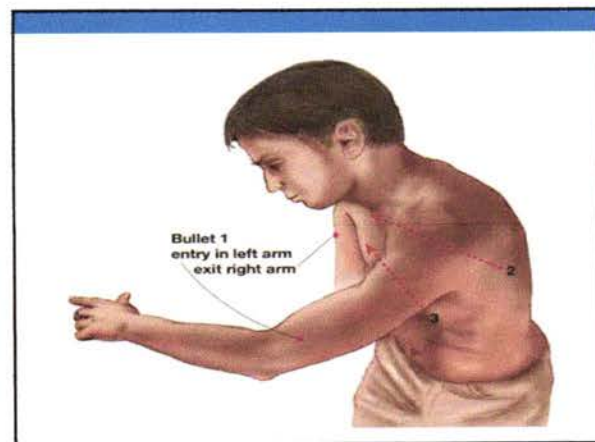
27

Trajectory Info Caution

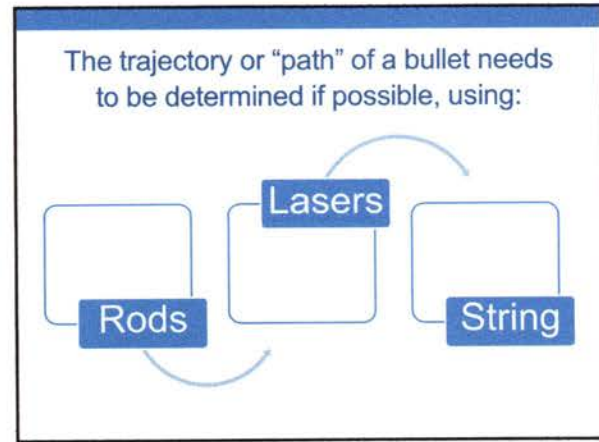
Occasionally the pathway of a bullet through the body may give some indication of the actual position of the body when shot.

For example, a bullet may exit one part of the body (such as an arm) only to reenter the torso or other body part. This may be suggested by the characteristics of the wounds, as well as the juxtaposition of the 2 wounds on certain positions of the body parts, which can be demonstrated at the time of autopsy.

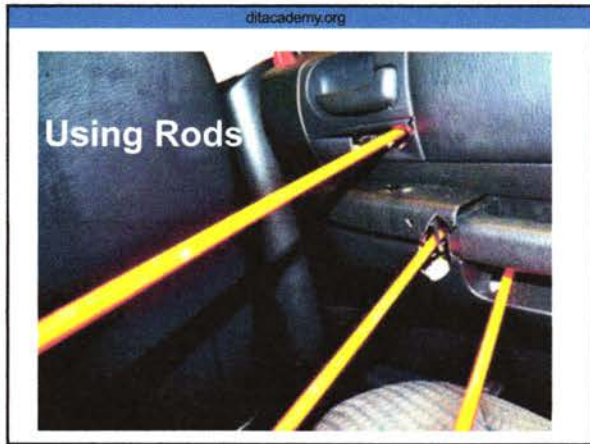
28



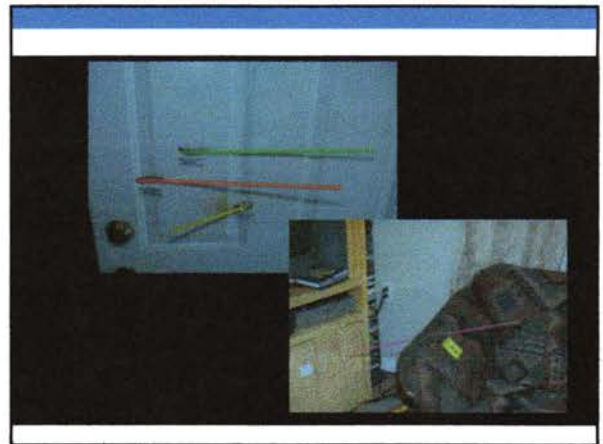
29



30



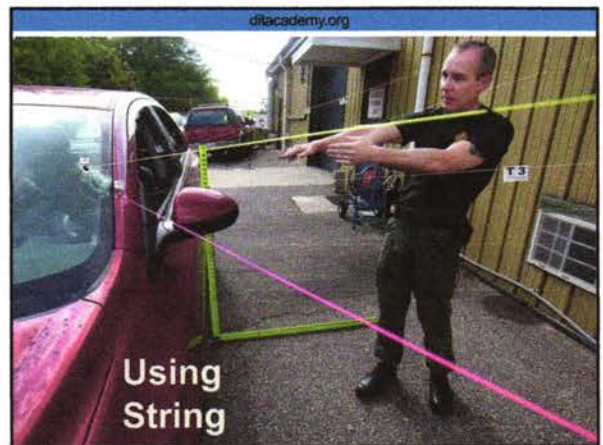
31



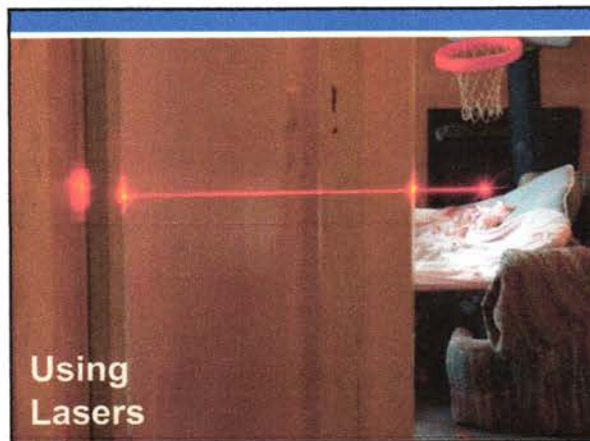
32



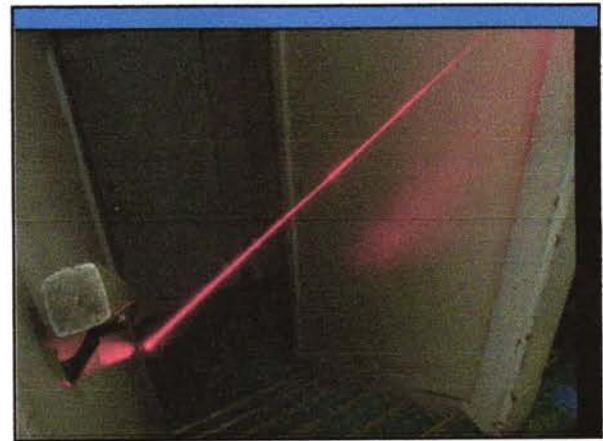
33



34



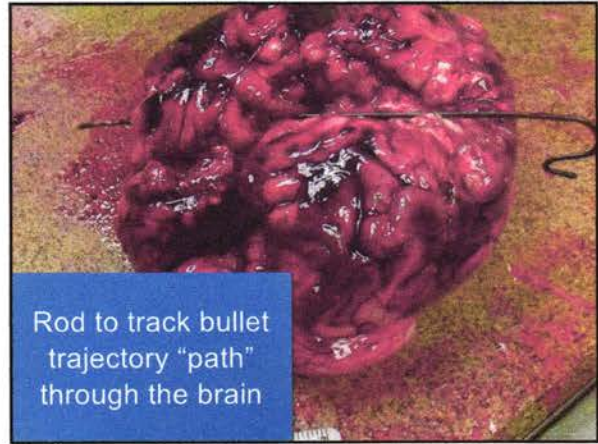
35



36



37




Rod to track bullet trajectory "path" through the brain

38


WOUND INTERPRETATION


The wound on a body can tell a story



39


Wound Interpretation


 Various types of firearms may produce wounds that have characteristics reflective of the type of weapon inflicting the injury. However, many characteristics of firearm wounds are similar across a range of weapons.



40

Wound Interpretation


 Various types of firearms may produce wounds that have characteristics reflective of the type of weapon inflicting the injury. However, many characteristics of firearm wounds are similar across a range of weapons.

 Wound type and interpretation is important to your investigation as it will prove a witness or suspect statement true or false, and help "tell the story" of the incident.

41

Abrasion Ring

An abrasion ring, formed when the force of the gases entering below the skin blow the skin surface back against the muzzle of the gun, is seen here in this ...



42

Abrasion ring with muzzle imprint

The abrasion ring, and a very clear muzzle imprint, are seen in this contact range gunshot wound.



43

Smoke and Soot GSR

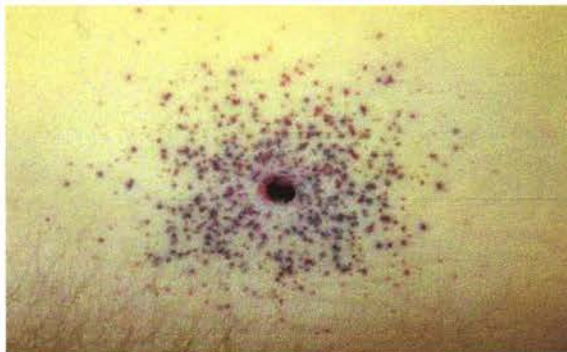
Residue on the skin from the smoke and soot produced from burnt gun powder.



44

Stippling and Tattooing

Caused from burnt and un-burnt powder hitting the skin and marking or staining skin



45

Entrance v. Exit

NEVER – Assume you know an entrance from an exit. Some characteristics are common. However, many factors can change wound types.

You can suspect, but always let the Pathologist say for sure. It is bad reporting and embarrassing for you to call an entrance wound an exit.

Might change the entire investigation..

Cont.

46

Entrance v. Exit

Bullets can do odd things when entering or exiting a body

- ✓ More than one entrance for one bullet
- ✓ Deflection Entrance (ricochet)
- ✓ Skin may seal over
- ✓ Oblong / Sideways entry
- ✓ Fragment Exit

47

ditacademy.org

Entrance Wounds

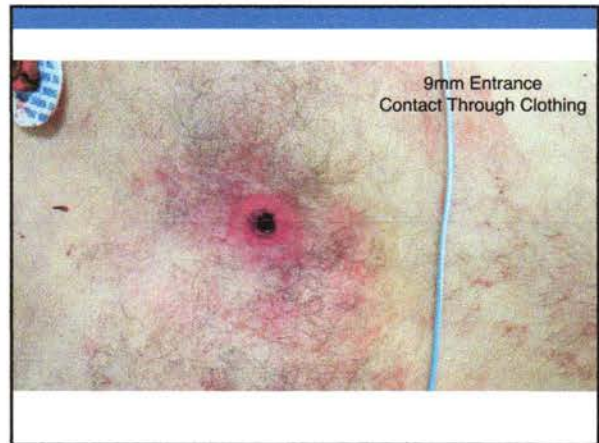
Firearm entrance wounds are typically round to oval, with smooth edges and a zone of epidermal (skin) abrasion surrounding the wound edge.

This abrasion is caused by the rubbing or scraping of surrounding skin surfaces by the bullet as it indents the skin before perforating it. If the bullet strikes perpendicular to the skin, the abrasion will be of uniform width around the wound.

48



49



50



51



52

ditacademy.org

Percussion Injuries

Percussion injuries from gun shot wounds are caused by the expansion of the skull or enclosed spaces of the body due to the introduction of gas pressure.

This may cause some entrance wounds to appear as exits if the skin is grossly lacerated.

53

ditacademy.org

Exit Wounds

Exit wounds are usually irregular, have no abrasion rim, and do not display soot deposition or stippling.

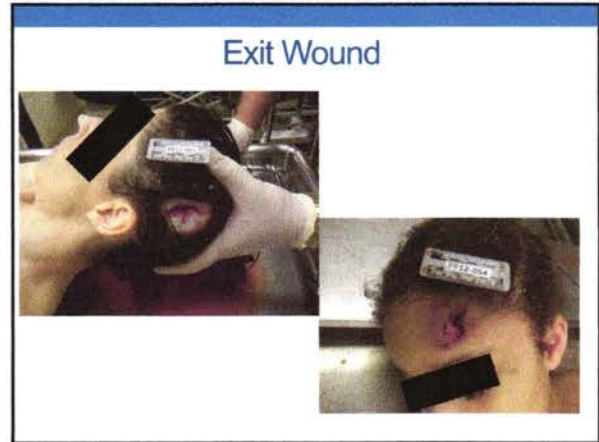
They may have a stellate configuration, or, particularly in the event of a low velocity exit wound, have a slit-like configuration. These can be deceptively sharp appearing and can mimic a stab wound.

See the following images.

54



55



56



57



58

Skull & Bone Beveling

In the case of head injuries, the best form of identifying an exit wound from an entrance is looking at the beveling of the skull in the bullet path.

↓

This can use be used, in some instances, for other areas of the body as well where bone is impacted, ie. ribs, sternum, scapula, or many other large flat bones.

↓

Internal beveling is where the inner surface of the skull is more eroded than the outer surface, producing a "cone" shape in the direction of the bullet path - See next slide example

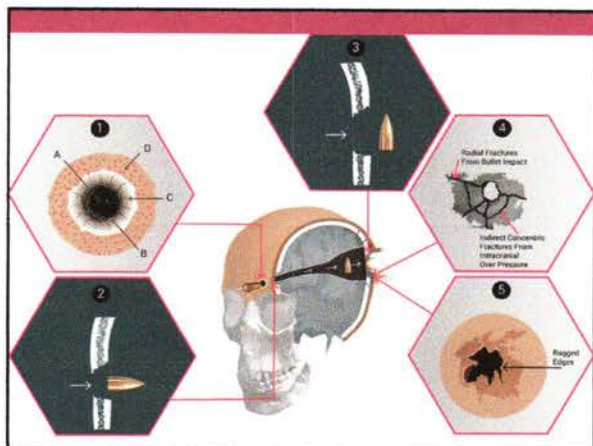
59

Beveling of Flat Bones :

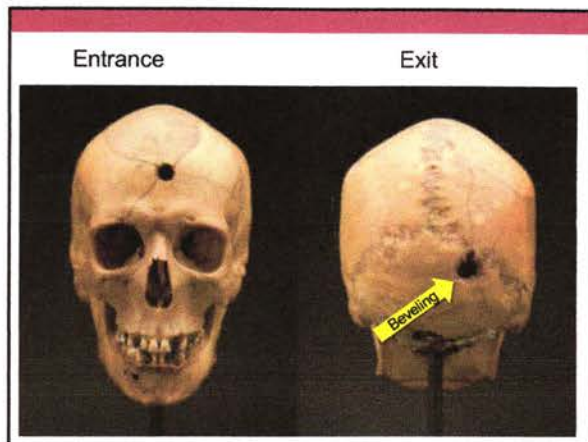
Internal beveling

External beveling

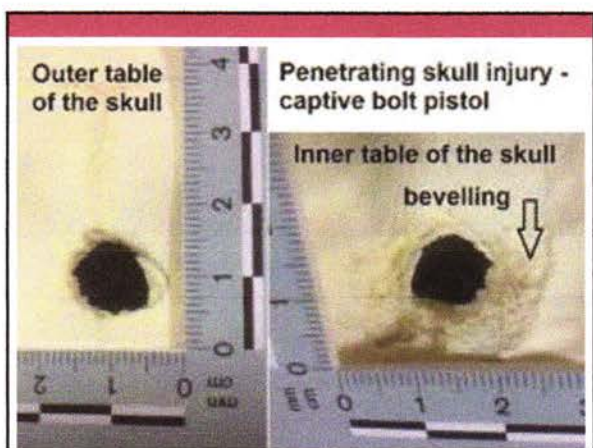
60



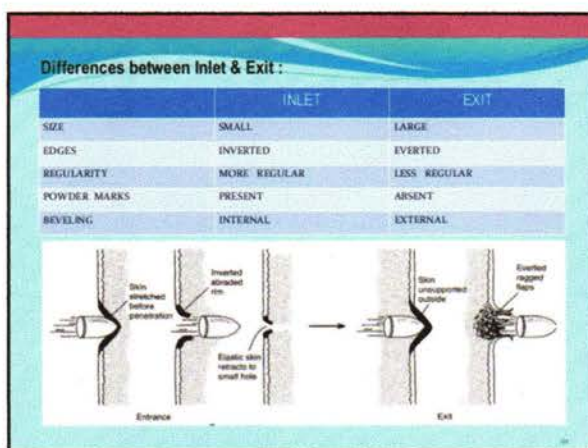
61



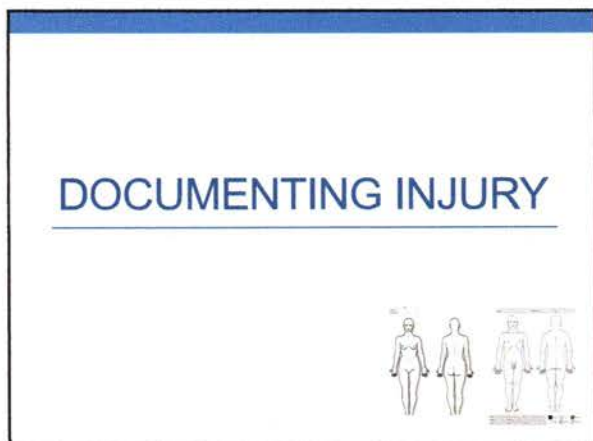
62



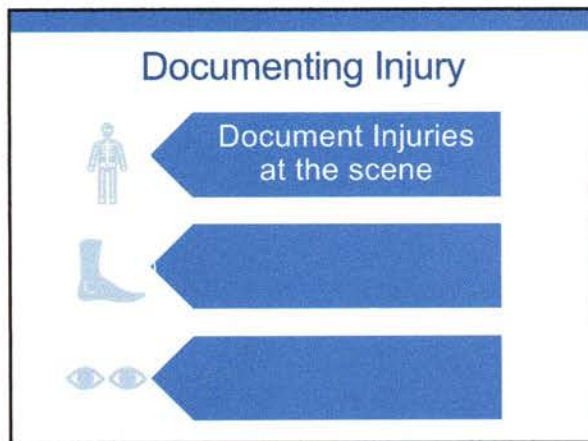
63



64



65



66

Documenting Injury

Document Injuries at the scene

Use Forensic Body Exam Chart

67

Documenting Injury

Document Injuries at the scene

Use Forensic Body Exam Chart

Pathologist wants to know what you saw

68

dliacademy.org

Documenting Injury

69

Documenting Injury

Handwritten notes: "Entry made by subject's right hand - preliminary autopsy report"

70

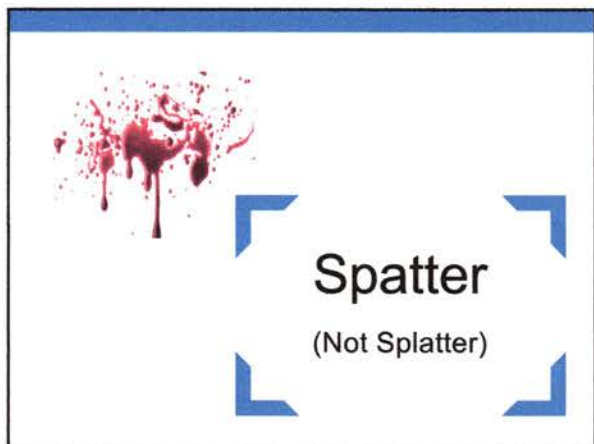
Let's Look at Scene Investigation

71

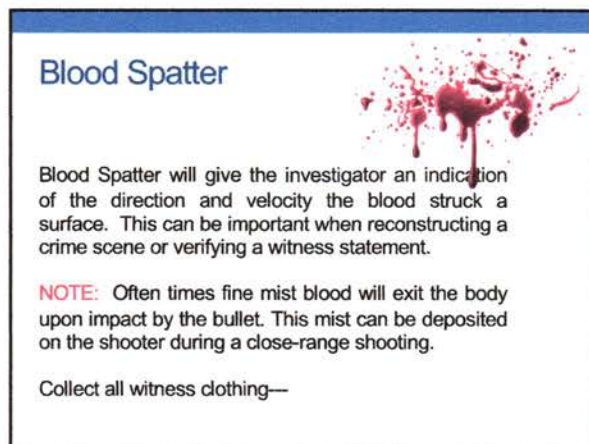
Scene Basics

- ✓ Photography of Scene
- ✓ Blood Spatter Evidence
- ✓ Collection of trace evidence prior to moving body
- ✓ Bag hands or not Why?
- ✓ Witness statements
- ✓ DO NOT shortcut these scenes – an injury may be a death later.... You only get one chance and the first chance.

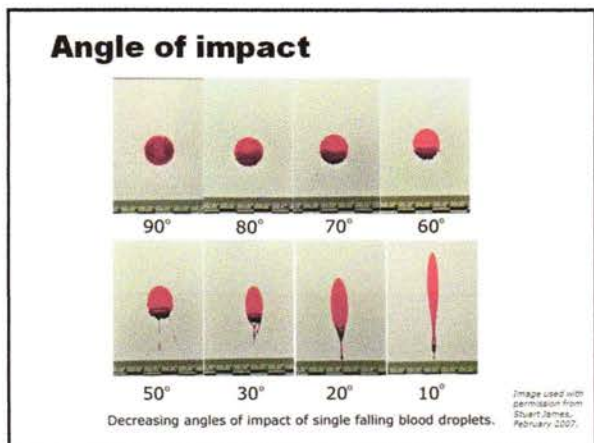
72



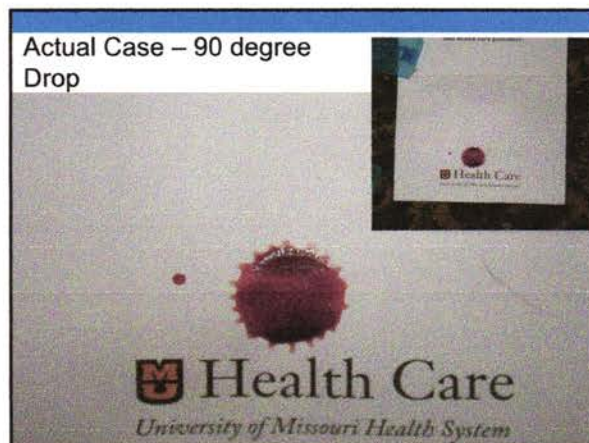
73



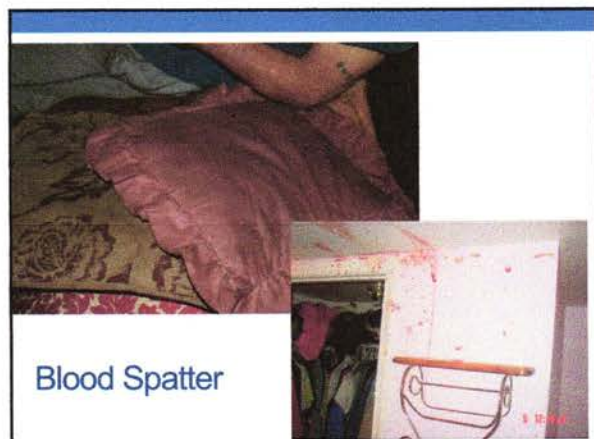
74



75



76



77

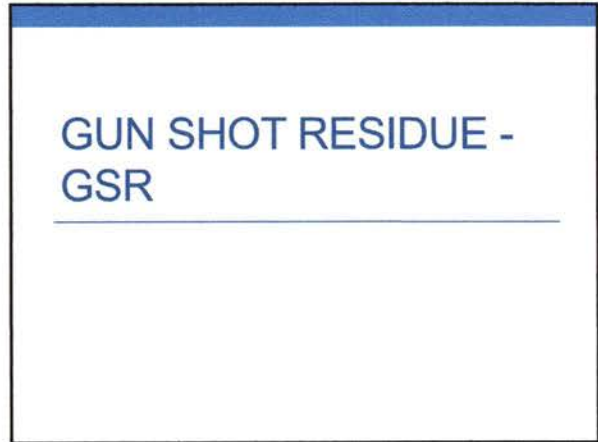


78

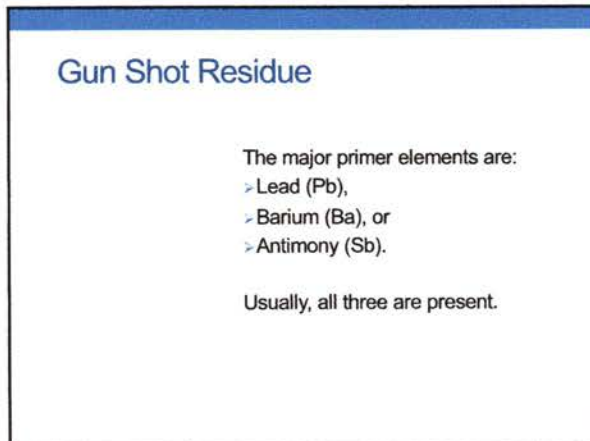


Blood Spatter on Weapon

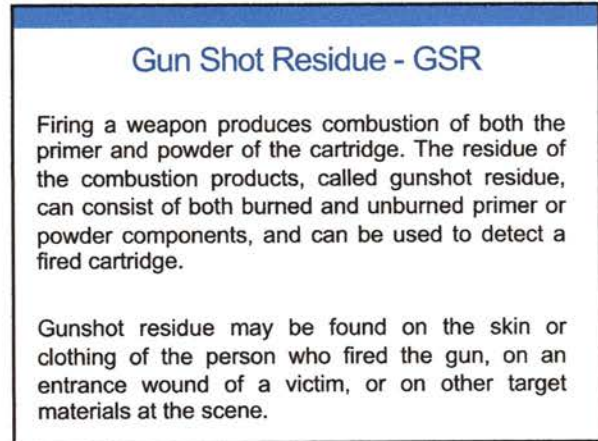
79



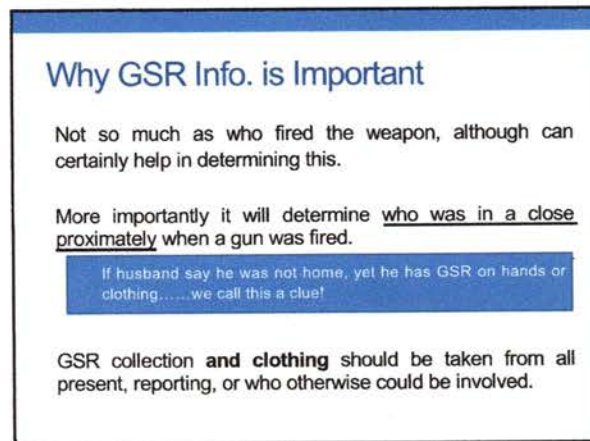
80



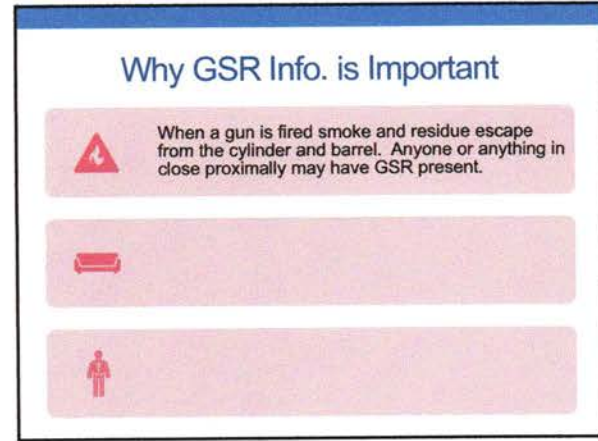
81



82






83






84

Why GSR Info. is Important

-  When a gun is fired smoke and residue escape from the cylinder and barrel. Anyone or anything in close proximally may have GSR present.
-  Testing (seizing) not only clothing but furniture or other items that may have been in close range.
- 

85

Why GSR Info. is Important

-  When a gun is fired smoke and residue escape from the cylinder and barrel. Anyone or anything in close proximally may have GSR present.
-  Testing (seizing) not only clothing but furniture or other items that may have been in close range.
-  Victim found in bedroom – you think it may have occurred in living room (small drop of blood) testing the area around the blood may reveal GSR. Might change manner of death.





86

When GSR may not help

-  Prior Handling of a Gun
-  GSR on Decedent
-  Not always Found in Testing

87

Summary

 Range of fire is important	 Never assume entrance v exit
 Using trajectory to determine facts	 Proper scene investigation a must

88

Questions and Discussion



89