

## When is a Bruise not a Bruise

### *Forensic Identification and Documentation of Possible Abuse and Neglect*

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## 4N6 RN

- Forensic Nurse
- Forensic = Pertaining to the Law
- International Association of Forensic Nurses
- [www.iafn.org](http://www.iafn.org)
- 1-410-626-7805

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## Survey says....

- How many of you have never accidentally hurt yourself?
- Locations???
- Accidental versus intentional
  - Distal
  - Proximal (central, midline, hidden)

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## Mechanism of Injury

- Mechanically – how could the injury have occurred???
- Think through the injury – try to mentally or physically recreate the mechanism
- Often times there can be a combination of mechanisms resulting in different types of injury

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## Common mechanisms

- Blunt force injury
  - Bruising, lacerations, fractures
- Crushing injury – same as above
- Sliding injury – abrasions, skin tears
- Sharp injury
  - Incisions, cuts, stab knife wound
- Penetrating injury
  - Knife wound
  - Puncture wound – stabbed with ice pick
  - Bullets – shrapnel

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## Theory(ies) of Causation

- Elicit as many theories of causation as possible.
- How did you get injured?
- How did he get that wound?
- How did she get that wound?
- You said you found your child on the ground with the injury, how do think it happened?

- <http://www.une.edu/main/egec/online-courses>  
Free course. Voice over PowerPoint with injury slides plus three video-taped assessment interviews in health care settings.

Approved for 2.0 University of New England CEU credits

- Alphabet of injuries.....
- Warning....
  - Many of the slides are very graphic.
  - Not shown for shock value
  - Shown for teaching value

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- Examples of Forensic Terminology and Injuries
- Medical Dictionary: **Forensic** means relating to or dealing with the application of scientific knowledge to legal problems (i.e., a forensic pathologist or forensic experts).

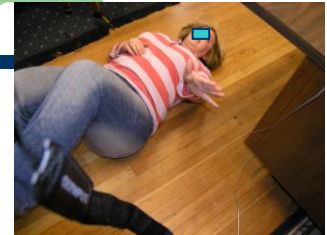
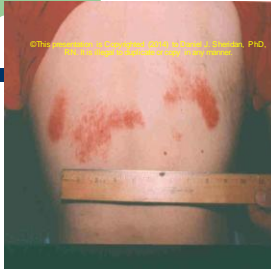
• <http://www.merriam-webster.com/medlineplus/forensic>

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## Abrasion

- A wound caused by rubbing or scraping the skin or mucous membrane.

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## Avulsion

- The tearing away of a structure or part. Often seen as a partial avulsion.

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## Bruise

- Blunt force trauma that results in a superficial discoloration due to hemorrhage into the tissue from ruptured blood vessels from beneath the skin surface without the skin itself being broken:
- also called a contusion.

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## Contusion

- A bruise:
- Traumatic injury of tissue without breakage of skin; blood accumulates in the surrounding tissue producing pain, swelling, tenderness, and discoloration.

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## Never date a bruise

- See Langlois & Gresham, 1991
- See Nash & Sheridan, 2009
- See Hughes & Langlois, 2010
- Katherine Nash Scafield, 2011

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## Cut

- See incision.

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## Ecchymosis (singular) Ecchymoses (plural)

- A hemorrhagic spot or blotch, larger than petechia, in the skin or mucous membrane forming a non-elevated, rounded, or irregular blue or purplish purpuric patch.
- Ecchymosis is not injury from blunt force trauma. It is NOT a bruise or contusion.
- Ecchymosis is purpura usually in the skin or mucous membranes.

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## Ecchymosis

- **Ecchymosis** in the elderly is often to the arms and/or hands.
- Blunt force trauma to the mid face often results in the development of bilateral periorbital **ecchymoses** (raccoon eyes).
- Discoloration from a **bruise** can be pulled by gravity downward. The downward discoloration is called **ecchymosis** while the discoloration at the point of blunt impact is called a **bruise**.

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### Review All Medications

- While many medications may place a resident at risk to bruise or bleed, the following are among the more common:
  - Aspirin
  - Coumadin (warfarin)
  - Heparin
  - Plavix
  - Valproic Acid
  - Prednisone



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### Medications

- Platelet inhibitors
  - ReoPro Aspirin Plavix
  - Agrylin Pletal Persantine
  - Integrilin Bilinta Ticlid
  - Aggrastat

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### Medications

- Anticoagulants – injectable
  - Thrombate III Acova Aggiomax
  - Fragmin Iprivask Aristra
  - Heparin
- Anticoagulants – oral
  - Pradexa Xarelto Coumadin

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### Review All Dietary Supplements

- Over 40 common, over-the-counter vitamins and supplements can place a resident at possible risk to bleed more easily, especially if the resident is already taking medication that is placing her or him at risk.
- The facility, investigator and the surveyor must be aware of medication-supplement interactions. Among the more commonly consumed at-risk supplements are
  - bilberry,
  - ginger,
  - garlic, and
  - ginko biloba.

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### Medications

- There is **NO MEDICATION** that **CAUSES** a patient to bruise !!!!!

### Hematoma

- A localized collection of blood

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## Hematoma

- **Hematoma:**
  - A localized collection of blood from a broken blood vessel (s).
- **Hematoma** is not a synonym for a *bruise* or a *contusion*.



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## Hemorrhage

- The escape of blood from a ruptured vessel. It can be internal, external, or into the skin or other tissue.

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## Incision

- An **Incision** = A cut.
- A cut that is deeper than it is wide is a **stab wound**
- A wound made by a sharp instrument or object (a sharp injury).
  - Scalpel, knife, razor, paper

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## Laceration

- The act of tearing. A wound produced by the tearing of body tissue often from blunt impact that is distinguished from a cut or incision.
- They're messy and often contain "stuff."
- "Stuff" = trace evidence = charted as "debris" in your notes

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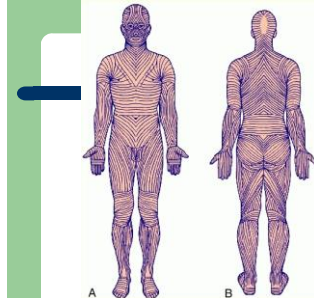


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## Langer's Lines

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## Lesion

- Any pathological or traumatic discontinuity of tissue or loss of function of a part.
- Broad term, including sores, ulcers, tumors, or other tissue damage.

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## Patterned Injury

- An injury where one is reasonably certain an object caused the injury, or certain which object caused the injury and/or by what mechanism an injury was caused.

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## Coining

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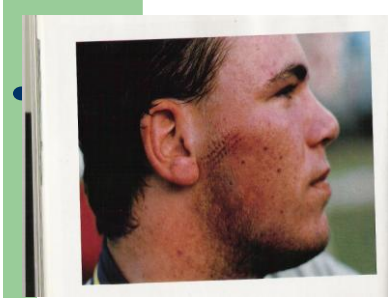
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## Cupping

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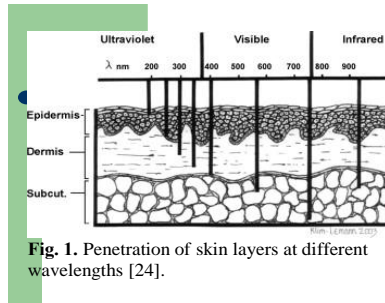


# ALS

Alternate Light Source

- ### Light - The Stokes Shift
- West et al. & Vogeley et al. discussed the Stokes Shift:
  - When Light strikes the skin it is:
    - Reflected
    - Transmitted
    - Scattered
    - Absorbed by chromophores in tissue

- ### What is Alternate Light?
- Just light within a particular wavelength band
  - NBV – narrow banded visible (light)
  - UV – ultraviolet (light)



- ### Types of Strangulation
- Manual
    - Hands, arm headlock, leg scissor headlock, forearm, knee, foot (most common)
  - Ligature
    - Any cord-like object wrapped around the neck
  - Mechanical
    - Bedrails, electric powered equipment (patient beds), staircase rails
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### Pattern of Injury

- Injuries in various stages of healing including new and old scars, contusions, fractures, wounds.



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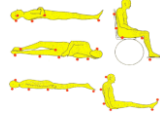
Central Cleaving = Tarsine Bruising  
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- Pressure ulcers

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### Locations of Pressure Ulcers



- Bony Prominence
- 95% on lower half of body
- Sacral area most common.

<http://www.healthnew.gov.au/hospitalinfo/pressure.html>

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### Take Home Points

- ALL Pressure ulcers are NOT preventable, but many are preventable.....
- ALL Pressure ulcers are NOT curable, but many are curable.....
- HOWEVER....
- ALL PRESSURE ULCERS ARE TREATABLE !!!!!!!!!!!!!!!

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### Petechia

- *Petechia* are minute, pin-point, non-raised, perfectly round, purplish-red purpuric spots caused by intradermal or sub-mucous hemorrhage, which later turn blue then yellow before fading away.

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## Petechia

- Petechia are caused by the rupture of capillaries. When blood is not allowed to leave the head/face because of occlusion or compression of the jugular veins, capillaries will burst in and around the eyes and face.



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## Puncture

- The act of piercing or penetrating with a pointed object or instrument.

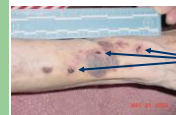
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## Purpura

- *Purpura* is a *hemorrhagic* rash with leakage of blood into the tissue.
- Often associated with bleeding or clotting disorders. *Ecchymosis* and *petechia* are forms of *purpura*.

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## Skin Tear



- *Skin tear*:  
- See *Avulsion*

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## Trace Physical Evidence

- Often embedded in an injury or the clothes of the patient will be trace physical evidence. One needs to ask herself if the trace physical evidence in wound or clothing (either observed in-person or by history) supports or distracts from the reported history or theory of causation.

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## Unexplained Injury

- It is relatively common, especially for institutionalized elderly to hear from caregivers that they have no idea how the patient received her/his injuries.
- All significant unexplained injuries to vulnerable patients should raise one's suspicions of possible abuse or neglect.

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## Wound

- A bodily injury caused by physical means, with disruption of the normal structures
  - contused w. - one which skin is unbroken
  - incised w. - one caused by cutting instrument
  - lacerated w. - one in which tissues are torn
  - open w. - one having free outward opening
  - penetrating w. - one caused by a sharp, slender object that passes through the skin into tissue

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## Documentation Pearls

- If you did not chart it.....
- You did not do it!!!!
- Avoid personal opinion
- Avoid charting arguments with co-workers
- Avoid derogatory remarks about client, family, or other providers
- Write legibly, legibly, legibly, legibly

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## Forensic Written Documentation

As verbatim as possible – paraphrase as needed

Do not sanitize or "medicalize"

Avoid pejorative documentation

- Do not use "patient refused," "uncooperative," or "non-compliant"
- Do not use "Alleged"
- Never write – "patient claims she was...."
- Replace with "patient declined," "patient said," "patient states," "patient reports"

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## Avoid pejorative documentation

- Stop charting "refused"
- Stop charting "uncooperative"
- Stop charting "non-compliant"
- Stop charting "alleged" and "allegedly"
- Stop charting your feelings
- Stop charting your anger

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## Forensic Photography

- Digital
- Frontal ID shot
- Rule of thirds
- Use different lighting
- Bracket your photographs
  - Patient Name
  - Patient ID Number
  - DOB
  - Date/Time of Photo
  - Name of Photographer
  - Physical Location

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## Rule of Thirds



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- Serial Photography





## Forensic Photography

- Photograph the environment - measure the room/furniture/equipment
- Color slides/tape measures/stick-ums
- Use a scale - ruler/coin/pencil
- Match injury to object if possible

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## Common Forensic Photographic Scales



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## Standard Color Rulers – search crime scene investigation tools

- Standardized Color Rulers and other evidence tools
- Basic rulers <\$1.50 and ABFO < \$6.00

For example:

- [http://www.safariland.com/rulers-and-scales/vinyl-6-inch-rulers-F\\_194.html#start=1](http://www.safariland.com/rulers-and-scales/vinyl-6-inch-rulers-F_194.html#start=1)
- [http://www.crimescene.com/store/index.php?main\\_page=product\\_info&cPath=53&products\\_id=391\\_10](http://www.crimescene.com/store/index.php?main_page=product_info&cPath=53&products_id=391_10) for \$12.95

## Labeling Photographic Images

- Whenever and by whomever pictures are taken in a facility, the photographs must be properly labeled.
- The following slides discuss the proper labeling of photographic images.

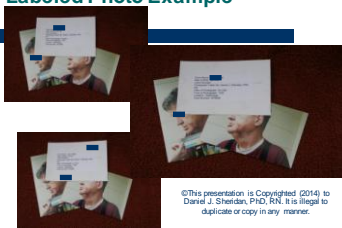
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## Labeling Photographic Images

- One of the most effective ways to label print photographs is with 2" X 4" shipping gum labels available from any office supply store.
- The labels can be written by hand or typed and printed on a laser or ink jet printer.

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## Labeled Photo Example



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## Labeling Photographic Images

- Label all pictures with:
- Patient/resident name
  - Date of birth & ID number
  - Facility name
  - Date and time of photo
  - Location of injury on the body
  - Photographer's name
  - Location
  - Case number (if assigned)

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## Photographic Documentation

- Medical photographs can be subpoenaed and presented in court as evidence if the case goes to trial.
- Residents should sign a "consent to photograph" form before health care providers take medical photographs.
- Use body maps as well as photographs to show accurate bruise coloring or unnoticeable tenderness that may not be visible in a photograph.
- High quality photographs are important as part of prudent documentation.

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## Photographic Documentation

- The photograph is a true and accurate representation of what the health care professional examined and treated on the day of the exam.

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## Collecting and Preserving Evidence

- The facility must have a protocol for evidence collection by facility staff that has been reviewed by local law enforcement, prosecutors, and the facility's legal counsel.
- In cases of abuse, facilities need to collect and preserve clothing that is bloodied or soiled. This includes bloodied or soiled bed sheets, clothes, and undergarments.

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## Collecting and Preserving Evidence



- If the patient has debris (trace physical evidence) on her or his body, some of the material should be swabbed into a clean sealable cup before it is washed away, unless delaying the washing process places the resident at increased risk of infection.
- Swab debris into a clean cup, seal and place a patient gum label on the container, and document when and from where the debris was collected.

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## Collecting and Preserving Evidence

- Use paper not plastic...Paper bags are air permeable. If there is any moisture (blood, body fluids, water) on the clothing or sheets, the moisture will evaporate through paper and will minimize evidence-destroying mold and bacterial growth.



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## Collecting and Preserving Evidence



Fold the bag over. Secure with tape. Label with a patient ID sticker. Then sign with the date and time.

## Collecting and Preserving Evidence



All envelopes, no matter the size, used for any evidence collection need to be sealed and labeled in a similar fashion.

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## Questions ?