

# **Comprehensive Classification System for Visible Intentional and Unintentional Acute Injuries**

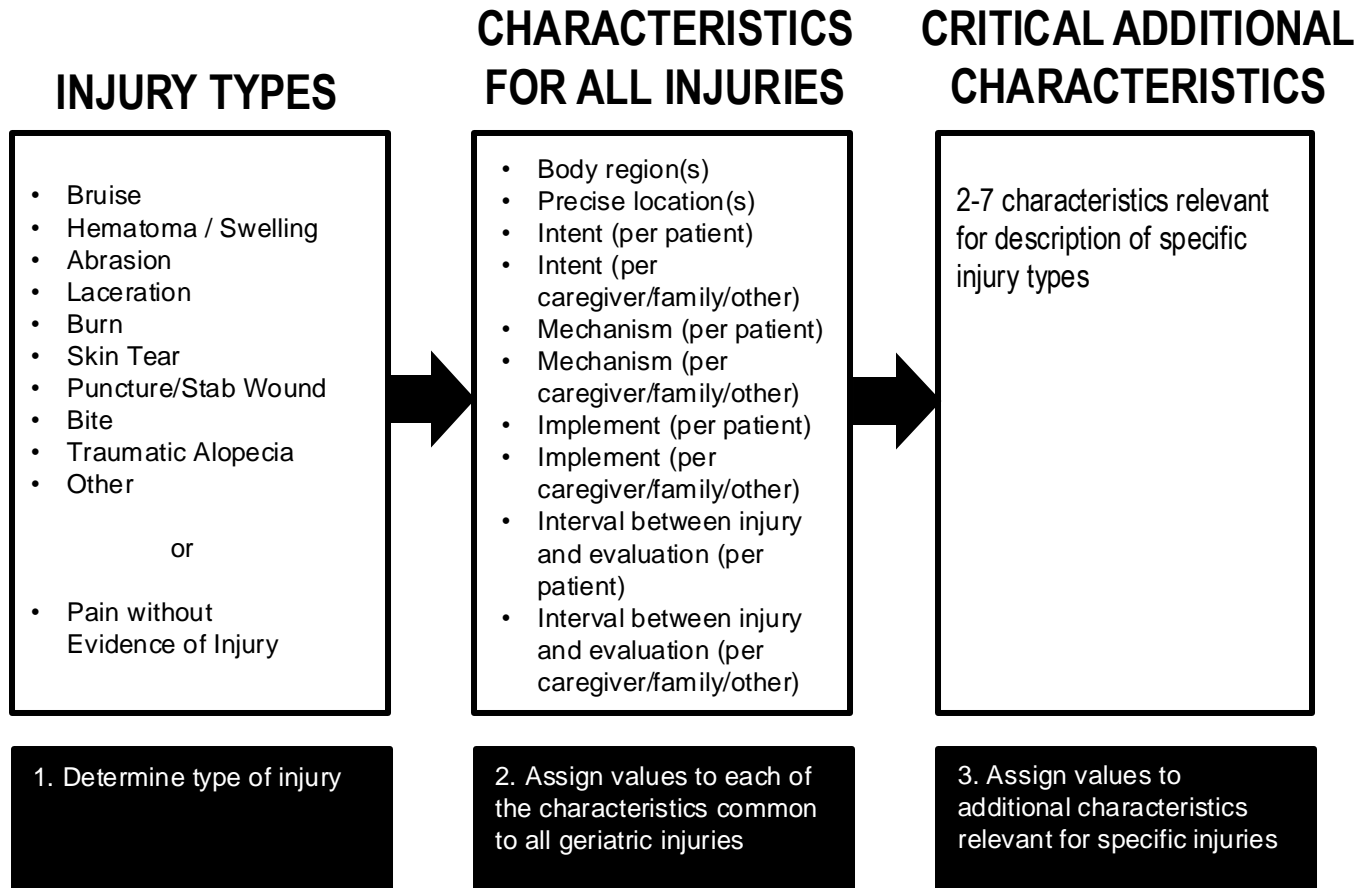
**Taxonomy for Research and Practice**

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# OVERVIEW OF 3-STEP CLASSIFICATION PROCESS



# CHARACTERISTICS FOR ALL INJURIES (details for Body Regions and Precise Locations)

## Body regions

Skull/Brain  
 Maxillofacial/Dental/Neck  
 Thorax (Chest)/Abdomen/Back  
 Pelvis/Gluteal Region  
 Upper Extremities  
 Lower Extremities

may select multiple

## Thorax (Chest)/Abdomen/Back Precise Locations

Left Supraclavicular  
 Right Supraclavicular  
 Left Clavicular  
 Right Clavicular  
 Left Pectoral / Anterior Thorax  
 Right Pectoral / Anterior Thorax  
 Sternal  
 Left Breast  
 Left Areola  
 Left Nipple  
 Right Breast  
 Right Areola  
 Right Nipple  
 Left Axilla  
 Right Axilla  
 Chest / Anterior Thorax - Unspecified  
 Left Lateral Thorax / Infra-Axillary Region  
 Right Lateral Thorax / Infra-Axillary Region  
 Left Upper Quadrant  
 Right Upper Quadrant  
 Left Lower Quadrant  
 Right Lower Quadrant  
 Periumbilical  
 Left Inguinal  
 Right Inguinal  
 Abdomen - Unspecified  
 Left Scapular Region  
 Right Scapular Region  
 Thoracic Spine  
 Left Paraspinal Thoracic  
 Right Paraspinal Thoracic  
 Thoracic Back - Unspecified  
 Lumbar Spine  
 Left Paraspinal Lumbar  
 Right Paraspinal Lumbar  
 Left Lumbar Back  
 Right Lumbar Back  
 Lumbar Back – Unspecified  
 Back - Unspecified  
 Not specified

may select multiple

## Skull/Brain Precise Locations

Left Temporal Region  
 Right Temporal Region  
 Left Mastoid Process  
 Right Mastoid Process  
 Left Parietal Region  
 Midline Skullcap  
 Right Parietal Region  
 Left Occipital Region  
 Right Occipital Region  
 Mid Occipital Region  
 Not Specified

may select multiple

## Pelvis/Gluteal Region Precise Locations

Pubic symphysis  
 Vulvar  
 Vaginal  
 Penile  
 Scrotal  
 Anorectal  
 Sacral  
 Coccygeal  
 Left Hip  
 Right Hip  
 Left Gluteal  
 Right Gluteal  
 Not specified

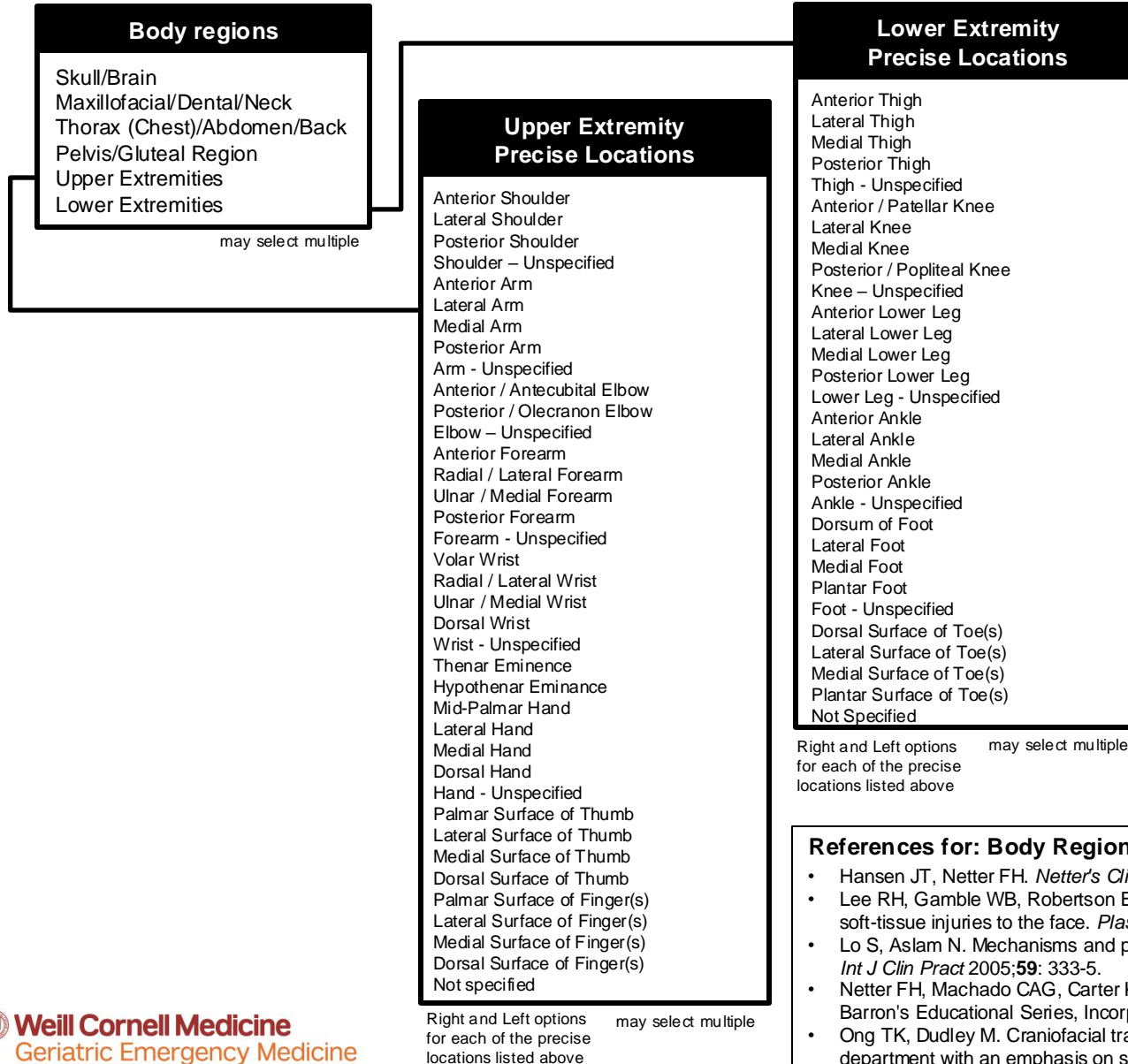
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## Maxillofacial/Dental/Neck Precise Locations

Left Frontal Region / Forehead  
 Right Frontal Region / Forehead  
 Mid Frontal Region / Forehead  
 Forehead - Unspecified  
 Left Supra-orbit  
 Left Infra-orbit  
 Left Medial Orbit  
 Left Lateral Orbit  
 Left Globe / Eye  
 Left Orbit - Unspecified  
 Right Supra-orbit  
 Right Infra-orbit  
 Right Medial Orbit  
 Right Lateral Orbit  
 Right Globe / Eye  
 Right Orbit - Unspecified  
 Left Nasal  
 Right Nasal  
 Nasal Bridge / Septum  
 Nose - Unspecified  
 Left External Ear  
 Right External Ear  
 Left Zygoma / Cheekbone  
 Right Zygoma / Cheekbone  
 Left External Buccal  
 Right External Buccal  
 Left Mandible  
 Right Mandible  
 Supra Peri-oral  
 Left Upper Lip  
 Right Upper Lip  
 Middle Upper Lip  
 Left Lower Lip  
 Right Lower Lip  
 Middle Lower Lip  
 Infra Peri-oral  
 Peri-oral / Lips - Unspecified  
 Left Mental / Chin  
 Right Mental / Chin  
 Mid Mental / Chin  
 Mental / Chin - Unspecified  
 Anterior Neck  
 Left Lateral Neck  
 Right Lateral Neck  
 Cervical Spine / Midline Posterior Neck  
 Neck - Unspecified  
 Not specified

may select multiple

# CHARACTERISTICS FOR ALL INJURIES (details for Body Regions and Precise Locations, ctd)



**References for: Body Regions, Precise Locations**

- Hansen JT, Netter FH. *Netter's Clinical Anatomy*. Philadelphia: Saunders/Elsevier; 2010.
- Lee RH, Gamble WB, Robertson B, Manson PN. The MCFONTZL classification system for soft-tissue injuries to the face. *Plast Reconstr Surg* 1999;**103**: 1150-7.
- Lo S, Aslam N. Mechanisms and pattern of facial lacerations in the Accident Department. *Int J Clin Pract* 2005;**59**: 333-5.
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- Ong TK, Dudley M. Craniofacial trauma presenting at an adult accident and emergency department with an emphasis on soft tissue injuries. *Injury* 1999;**30**: 357-63.
- Shepherd JP, Al-Kotany MY, Subadan C, Scully C. Assault and facial soft tissue injuries. *Br J Plast Surg* 1987;**40**: 614-9.

# CHARACTERISTICS FOR ALL INJURIES (details for Intents, Mechanisms, Implements, Time Interval)

## Intents

Intentional injury / assault  
Unintentional Injury  
Intentional self-harm  
Legal intervention  
Unknown

may select multiple

## Mechanisms

Blunt assault with hand/fist  
Blunt assault with foot/knee  
Blunt assault with other body part  
Blunt assault with object  
Push/shove, fall during altercation  
Strangulation/suffocation  
Grab/twist/pinch  
Bite (human)  
Penetrating assault with object  
Using body weight / sitting on victim  
Pulling hair  
Rape / sexual assault  
Fall from standing / sitting  
Fall from height  
Motor vehicle collision - occupant  
Pedestrian struck by motor vehicle  
Bicyclist struck by motor vehicle  
Poisoning  
Fire/Burn  
Suffocation  
Drowning  
Bite / sting by animal  
Jump from height  
Other  
Unknown

may select multiple

## Implements

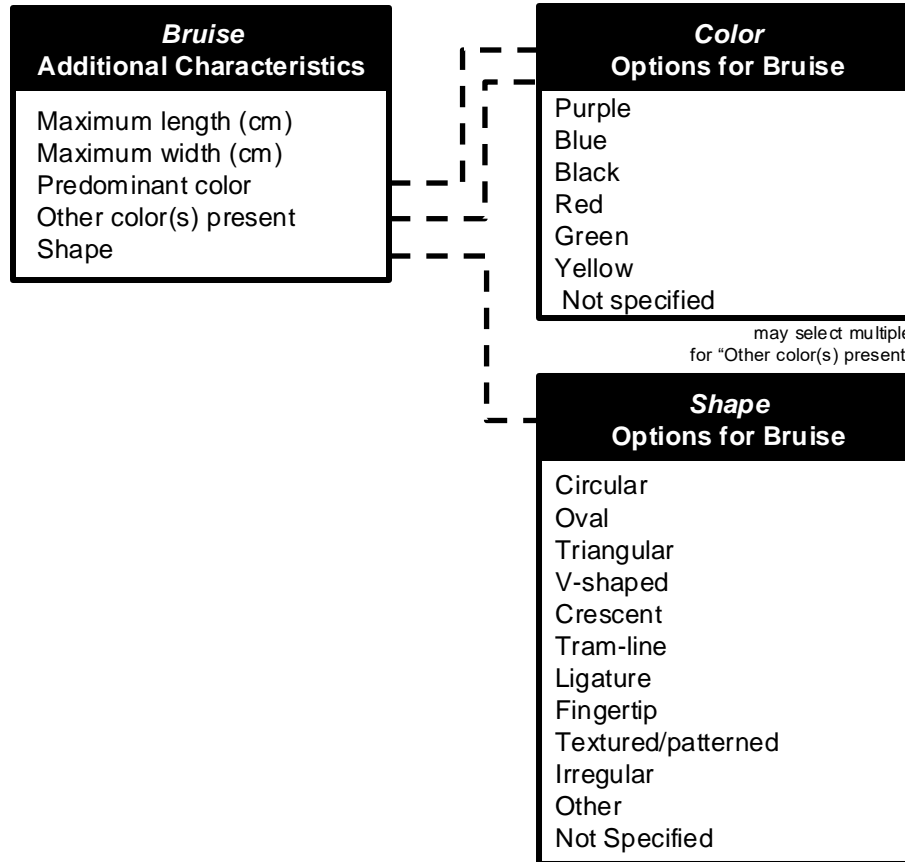
Closed fist  
Open hand  
Feet  
Knees  
Other body part  
Body weight  
Handgun  
Rifle  
Knife  
Piece of furniture  
Cane  
Baseball bat  
Bottle  
Telephone  
Kitchen utensils  
Broomstick  
Rope  
Other household object  
Other object  
Unknown

may select multiple

## Time Interval between Injury and Evaluation

<1 Day  
1 Day  
2 Days  
3 Days  
4 Days  
5 Days  
6 Days  
7-14 Days  
15-29 Days  
1-2 Months  
3-6 Months  
7-12 Months  
>1 Year  
Unknown

# CRITICAL ADDITIONAL CHARACTERISTICS FOR SPECIFIC INJURY TYPES



**References for: Bruises**

- Carpenter RF. The prevalence and distribution of bruising in babies. *Arch Dis Child* 1999;**80**: 363-6.
- Dunstan FD, Guildea ZE, Kontos K, Kemp AM, Sibert JR. A scoring system for bruise patterns: a tool for identifying abuse. *Arch Dis Child* 2002;**86**: 330-3.
- Kaczor K, Pierce MC, Makoroff K, Corey TS. Bruising and physical child abuse. *Clin Pediatr Emerg Med.* 2006;**7**(3):153-60.
- Lecomte MM, Holmes T, Kay DP, Simons JL, Vintiner SK. The use of photographs to record variation in bruising response in humans. *Forensic Sci Int* 2013;**231**: 213-8.
- Madea B. *Handbook of Forensic Medicine.* 1st ed. Chichester: Wiley Blackwell; 2014.
- Maguire S, Mann M. Systematic reviews of bruising in relation to child abuse-what have we learnt: an overview of review updates. *Evid Based Child Health* 2013;**8**: 255-63.
- Maguire S, Mann MK, Sibert J, Kemp A. Are there patterns of bruising in childhood which are diagnostic or suggestive of abuse? A systematic review. *Arch Dis Child* 2005;**90**: 182-6.
- Payne-James J, McGover C, Jones R, Karch SB, Manlove J. *Simpson's Forensic Medicine.* 13th ed. London: Hodder Arnold; 2011.
- Mosqueda L, Burnight K, Liao S. The life cycle of bruises in older adults. *J Am Geriatr Soc* 2005;**53**: 1339-43.
- Wiglesworth A, Austin R, Corona M, et al. Bruising as a marker of physical elder abuse. *J Am Geriatr Soc* 2009;**57**: 1191-6.

**Definitions for selected Bruise: Shapes**

- **Tram-line:** pattern characterized by parallel linear bruises with regions of sparing between them -- created when a relatively light object impacts the skin surface rapidly
- **Ligature:** mark usually encircling the neck in a horizontal plane often overlying the larynx or upper trachea – may also appear surrounding wrists or ankles
- **Fingertip:** bruises from a continually or forcefully applied grip are often relatively round and may coincide with 2 to 4 fingertips -- thumb bruise may also be noted on the opposite side

# CRITICAL ADDITIONAL CHARACTERISTICS FOR SPECIFIC INJURY TYPES

## ***Soft Tissue Swelling*** **Additional Characteristics**

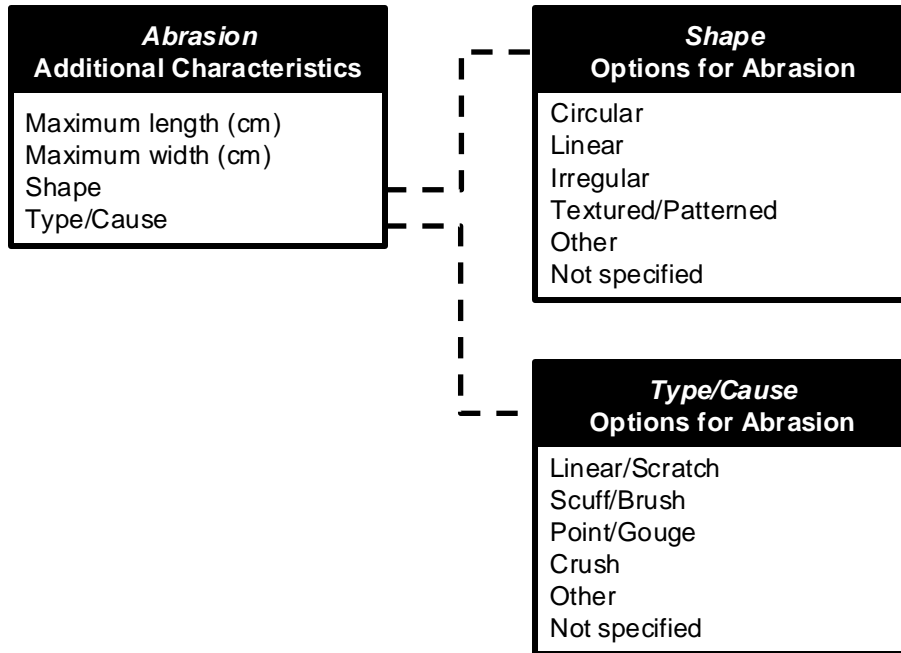
Maximum length (cm)  
Maximum width (cm)

## **References for: Soft Tissue Swelling**

- Kellogg ND, American Academy of Pediatrics Committee on Child Abuse and Neglect. Evaluation of suspected child physical abuse. *Pediatrics* 2007;119: 1232-41.
- Payne-James J, McGover C, Jones R, Karch SB, Manlove J. *Simpson's Forensic Medicine*. 13th ed. London: Hodder Arnold; 2011.
- Sheridan DJ, Nash KR. Acute injury patterns of intimate partner violence victims. *Trauma Violence Abuse* 2007;8: 281-9.



# CRITICAL ADDITIONAL CHARACTERISTICS FOR SPECIFIC INJURY TYPES



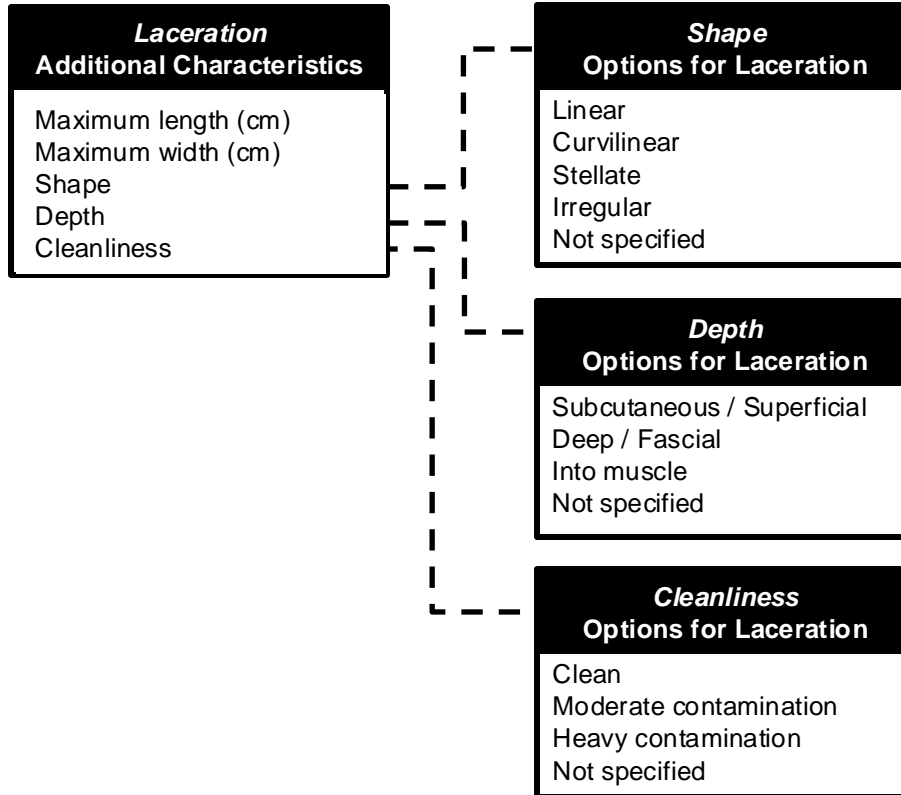
## References for: Abrasions

- DiMaio VJM, DiMaio DJ. *Forensic Pathology*. 2nd ed. Boca Raton, FL: CRC Press; 2001.
- Madea B. *Handbook of Forensic Medicine*. 1st ed. Chichester: Wiley Blackwell; 2014.
- Payne-James J, McGover C, Jones R, Karch SB, Manlove J. *Simpson's Forensic Medicine*. 13th ed. London: Hodder Arnold; 2011.
- Reddy K, Lowenstein EJ. Forensics in dermatology: part I. *J Am Acad Dermatol* 2011;**64**: 801-8.
- Saukko PJ, Knight B. *Knight's Forensic Pathology*. 4th ed. Boca Raton, FL: CRC Press; 2015.

## Definitions for selected Abrasion: Types/Causes

- **Scuff/Brush**: lateral rubbing action scrapes off the superficial layers of the skin
- **Crush**: injuring object may be reflected by the shape of the skin injury, so that the patterned abrasion can be regarded as an imprint of the causative object, often depicting edges or protruding parts

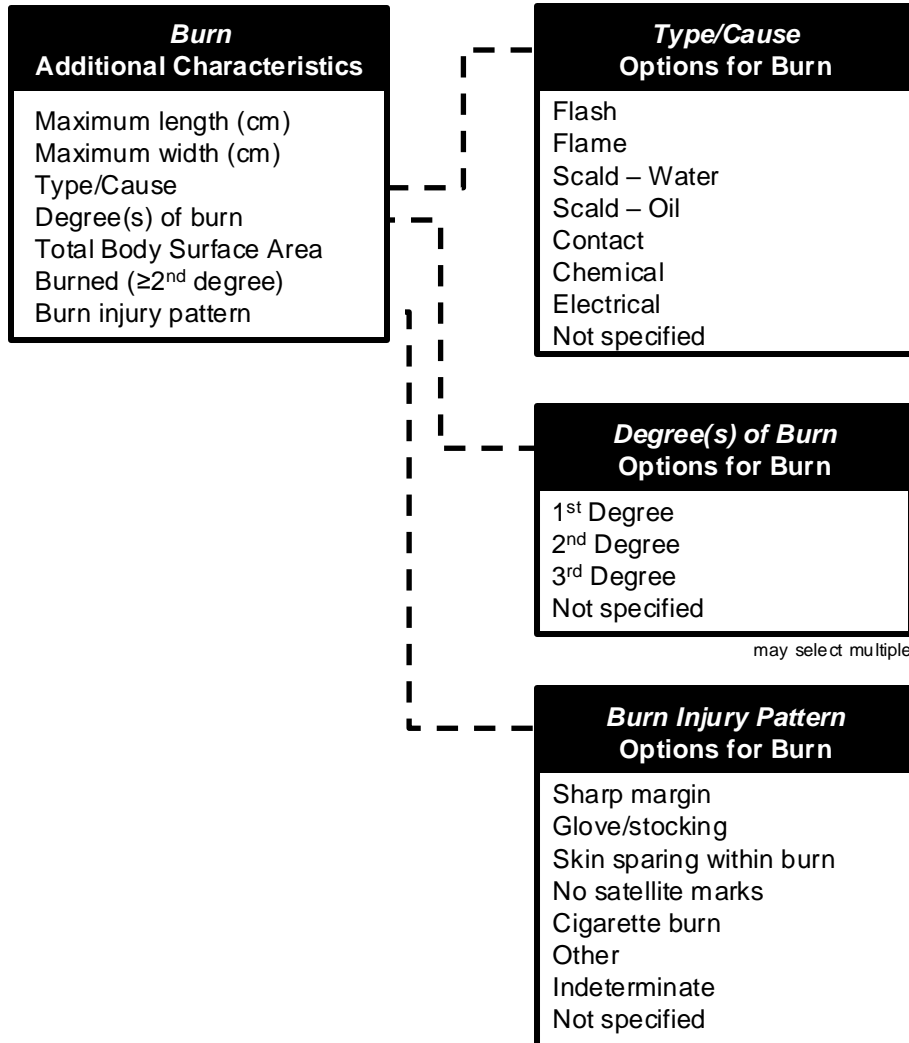
# CRITICAL ADDITIONAL CHARACTERISTICS FOR SPECIFIC INJURY TYPES



**References for: Lacerations**

- DiMaio VJM, DiMaio DJ. *Forensic Pathology*. 2nd ed. Boca Raton, FL: CRC Press; 2001.
- Lee RH, Gamble WB, Robertson B, Manson PN. The MCFONTZL classification system for soft-tissue injuries to the face. *Plast Reconstr Surg* 1999;**103**: 1150-7.
- Lo S, Aslam N. Mechanisms and pattern of facial lacerations in the Accident Department. *Int J Clin Pract* 2005;**59**: 333-5.
- Madea B. *Handbook of Forensic Medicine*. 1st ed. Chichester: Wiley Blackwell; 2014.
- Payne-James J, McGover C, Jones R, Karch SB, Manlove J. *Simpson's Forensic Medicine*. 13th ed. London: Hodder Arnold; 2011.
- Saukko PJ, Knight B. *Knight's Forensic Pathology*. 4th ed. Boca Raton, FL: CRC Press; 2015.

# CRITICAL ADDITIONAL CHARACTERISTICS FOR SPECIFIC INJURY TYPES



## References for: Burns

- DiMaio VJM, DiMaio DJ. *Forensic Pathology*. 2nd ed. Boca Raton, FL: CRC Press; 2001.
- Greenbaum AR, Donne J, Wilson D, Dunn KW. Intentional burn injury: an evidence-based, clinical and forensic review. *Burns* 2004;**30**: 628-42.
- Greenbaum AR, Horton JB, Williams CJ, Shah M, Dunn KW. Burn injuries inflicted on children or the elderly: a framework for clinical and forensic assessment. *Plast Reconstr Surg* 2006;**118**: 46e-58e.
- Madea B. *Handbook of Forensic Medicine*. 1st ed. Chichester: Wiley Blackwell; 2014.
- Payne-James J, McGover C, Jones R, Karch SB, Manlove J. *Simpson's Forensic Medicine*. 13th ed. London: Hodder Arnold; 2011
- Reddy K, Lowenstein EJ. Forensics in dermatology: part II. *J Am Acad Dermatol*. 2011;**64**(5):811-24.
- Saukko PJ, Knight B. *Knight's Forensic Pathology*. 4th ed. Boca Raton, FL: CRC Press; 2015.

## Definitions for selected Burn: Types/Causes

- **Flash**: caused by the sudden ignition or explosion of gases, petrochemicals or fine particulate material
- **Flame**: actual contact of body and flame, with scorching of the skin progressing to charring
- **Contact**: physical contact between the body and a hot object

## Definitions for selected Burn: Injury Patterns

- **Glove/stocking**: burn on hands and/or feet with sharp line of demarcation giving the appearance of gloves or stockings occurring when feet or hands are held in the water
- **Skin sparing within burn**: presence of spared areas within areas of burn and sharp demarcations between burned and un-burned skin (such as in joint flexion surfaces)
- **Cigarette burn**: characteristically appear as circular lesions 8mm to 10mm in diameter with a central crater surrounded by a rolled margin

# CRITICAL ADDITIONAL CHARACTERISTICS FOR SPECIFIC INJURY TYPES

**Skin Tear**  
**Additional Characteristics**

Maximum length (cm)  
 Maximum width (cm)  
 Flap tissue loss  
 Flap color

**Flap Tissue Loss**  
**Options for Skin Tear**

No skin loss  
 Partial flap loss  
 Total flap loss  
 Not specified

This is the ISTAP Skin Tear Classification System from:  
 LeBlanc K, Baranoski S, Christensen D, et al. International Skin Tear Advisory Panel: a tool kit to aid in the prevention, assessment, and treatment of skin tears using a Simplified Classification System. *Adv Skin Wound Care* 2013;26:459-76.

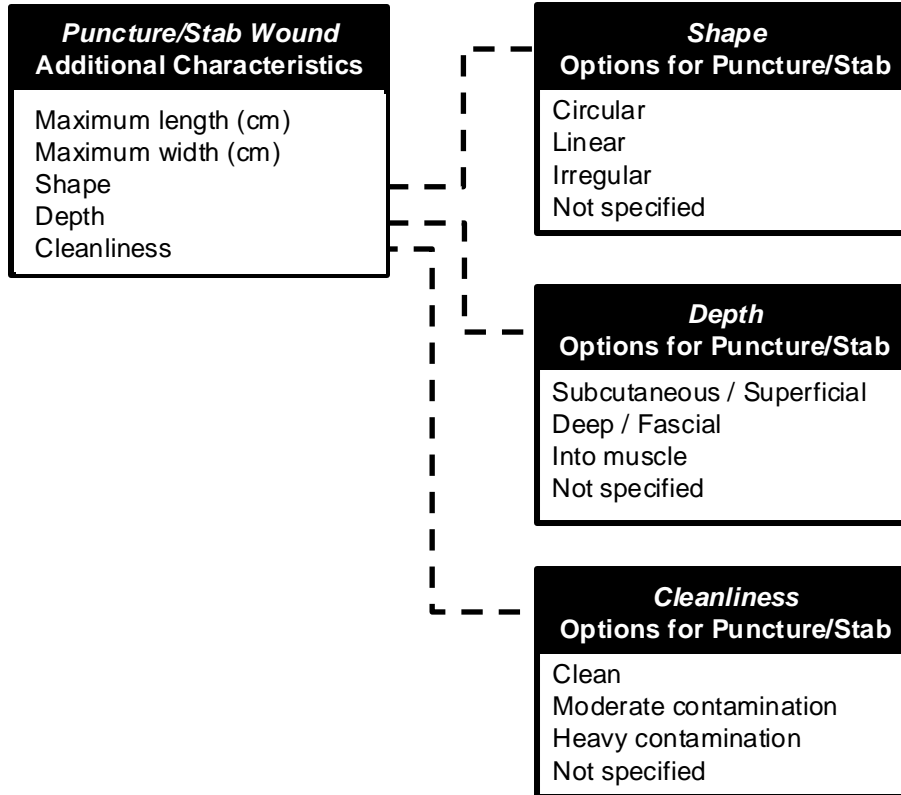
**Flap Color**  
**Options for Skin Tear**

Pale, dusky, or darkened  
 Not pale, dusky, or darkened  
 Not specified

**References for: Skin Tears**

- Carville K LG, Newall N, Haslehurst P, Michael R, Santamaria N, Roberts P. STAR: A consensus for skin tear classification. *Prim Intent* 2007;15: 18-28.
- LeBlanc K, Baranoski S, Christensen D, Langemo D, Sammon MA, Edwards K, et al. International Skin Tear Advisory Panel: a tool kit to aid in the prevention, assessment, and treatment of skin tears using a Simplified Classification System. *Adv Skin Wound Care* 2013;26: 459-76.
- LeBlanc K, Baranoski S, Holloway S, Langemo D. Validation of a new classification system for skin tears. *Adv Skin Wound Care* 2013;26: 263-5.
- Payne RL, Martin ML. The epidemiology and management of skin tears in older adults. *Ostomy Wound Manage* 1990;26: 26-37.
- Payne RL, Martin ML. Defining and classifying skin tears: need for a common language. *Ostomy Wound Manage* 1993;39: 16-20, 2-4, 6.

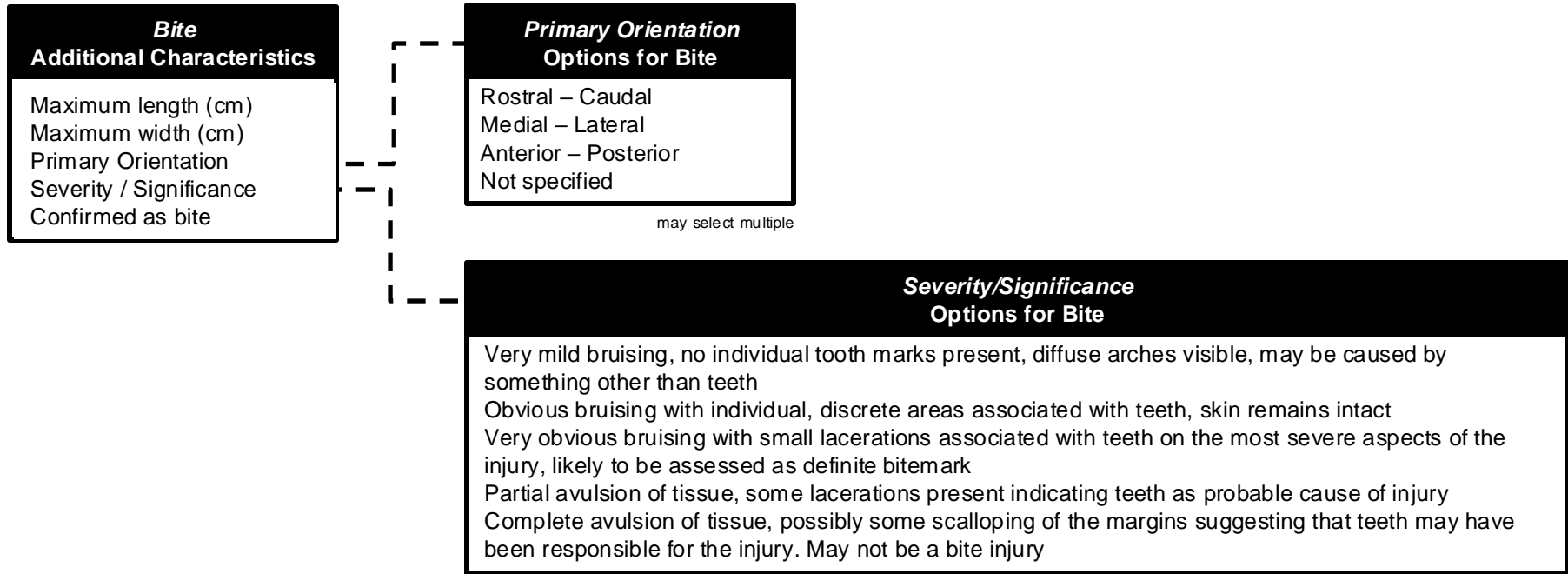
# CRITICAL ADDITIONAL CHARACTERISTICS FOR SPECIFIC INJURY TYPES



**References for: Puncture/Stab Wounds**

- DiMaio VJM, DiMaio DJ. *Forensic Pathology*. 2nd ed. Boca Raton, FL: CRC Press; 2001.
- Madea B. *Handbook of Forensic Medicine*. 1st ed. Chichester: Wiley Blackwell; 2014.
- Payne-James J, McGover C, Jones R, Karch SB, Manlove J. *Simpson's Forensic Medicine*. 13th ed. London: Hodder Arnold; 2011.
- Saukko PJ, Knight B. *Knight's Forensic Pathology*. 4th ed. Boca Raton, FL: CRC Press; 2015.

# CRITICAL ADDITIONAL CHARACTERISTICS FOR SPECIFIC INJURY TYPES



This is the Bitemark Severity and Significance Scale from:  
 Pretty IA. Development and validation of a human bitemark severity and significance scale. *J Forensic Sci* 2007;52:687-91.

**References for: Bites**

- Pretty IA. Development and validation of a human bitemark severity and significance scale. *J Forensic Sci* 2007;52: 687-91.
- Pretty IA, Sweet D. A paradigm shift in the analysis of bitemarks. *Forensic Sci Int* 2010;201: 38-44.
- Sweet D, Pretty IA. A look at forensic dentistry--Part 2: teeth as weapons of violence--identification of bitemark perpetrators. *Br Dent J* 2001;190: 415-8.

# CRITICAL ADDITIONAL CHARACTERISTICS FOR SPECIFIC INJURY TYPES

## ***Traumatic Alopecia*** **Additional Characteristics**

Maximum length (cm)  
Maximum width (cm)  
Sharp delineation between  
injury patch and hair  
Hair breakage  
Associated with  
hemorrhage or  
hematoma

## **References for: Traumatic Alopecia**

- Collins KA. Elder maltreatment: a review. *Arch Pathol Lab Med* 2006;**130**: 1290-6.
- Palmer M, Brodell RT, Mostow EN. Elder abuse: dermatologic clues and critical solutions. *J Am Acad Dermatol* 2013;**68**: e37-42
- Sheridan DJ, Nash KR. Acute injury patterns of intimate partner violence victims. *Trauma Violence Abuse* 2007;**8**: 281-9.
- Whiting DA. Traumatic alopecia. *Int J Dermatol* 1999;**38 Suppl 1**: 34-44.

# COMPLETE REFERENCE LIST

- Carpenter RF. The prevalence and distribution of bruising in babies. *Arch Dis Child* 1999;**80**: 363-6.
- Carville K LG, Newall N, Haslehurst P, Michael R, Santamaria N, Roberts P. STAR: A consensus for skin tear classification. *Prim Intent* 2007;**15**: 18-28.
- Collins KA. Elder maltreatment: a review. *Arch Pathol Lab Med* 2006;**130**: 1290-6.
- DiMaio VJM, DiMaio DJ. *Forensic Pathology*. 2nd ed. Boca Raton, FL: CRC Press; 2001.
- Dunstan FD, Guildea ZE, Kontos K, Kemp AM, Sibert JR. A scoring system for bruise patterns: a tool for identifying abuse. *Arch Dis Child* 2002;**86**: 330-3.
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- Kellogg ND, American Academy of Pediatrics Committee on Child Abuse and Neglect. Evaluation of suspected child physical abuse. *Pediatrics* 2007;**119**: 1232-41.
- LeBlanc K, Baranoski S, Christensen D, Langemo D, Sammon MA, Edwards K, et al. International Skin Tear Advisory Panel: a tool kit to aid in the prevention, assessment, and treatment of skin tears using a Simplified Classification System. *Adv Skin Wound Care* 2013;**26**: 459-76.
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- Payne RL, Martin ML. The epidemiology and management of skin tears in older adults. *Ostomy Wound Manage* 1990;**26**: 26-37.
- Payne-James J, McGover C, Jones R, Karch SB, Manlove J. *Simpson's Forensic Medicine*. 13th ed. London: Hodder Arnold; 2011.
- Pretty IA, Sweet D. A paradigm shift in the analysis of bitemarks. *Forensic Sci Int* 2010;**201**: 38-44.
- Pretty IA. Development and validation of a human bitemark severity and significance scale. *J Forensic Sci* 2007;**52**: 687-91.
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- Saukko PJ, Knight B. *Knight's Forensic Pathology*. 4th ed. Boca Raton: CRC Press; 2015.
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- Wiglesworth A, Austin R, Corona M, et al. Bruising as a marker of physical elder abuse. *J Am Geriatr Soc* 2009;**57**: 1191-6.