

Guideline



CCHMC Trauma Service Guidelines

Title: Child Physical Abuse Evaluation and Management

Effective Date: 02/2022

Number: TR-08

Page: 1 of 5

1.0 SCOPE

- 1.1. Any CCHMC employee who provides care to a Trauma Services Patient.
- 1.2. This guideline is intended for use in the Emergency Department and the inpatient Trauma Service. It may also apply to any patient at CCHMC regardless of physical location and primary team.

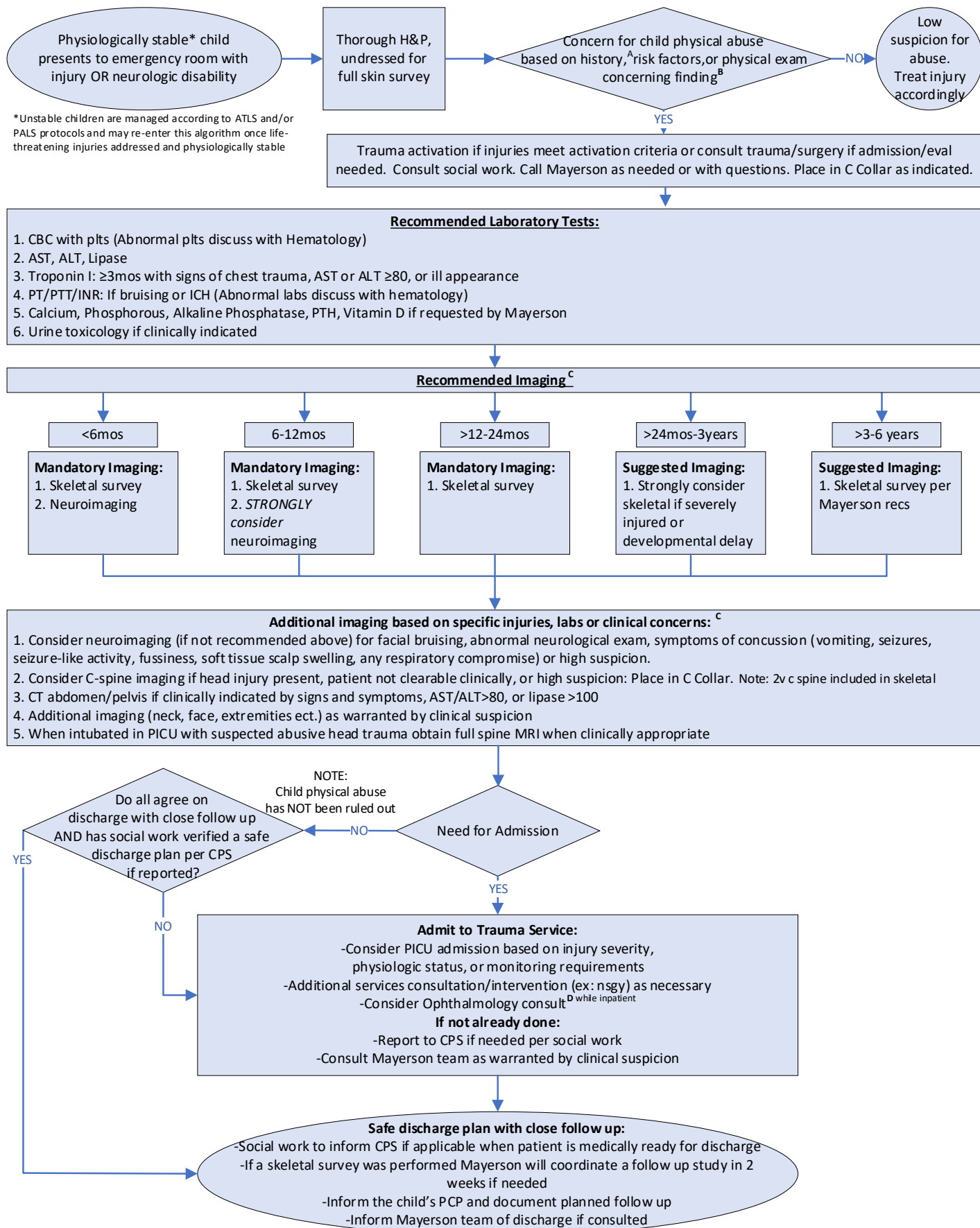
2.0 DEFINITIONS

- 2.1. CPS: Child Protective Services
- 2.2. CPA: Child physical abuse
- 2.3. AHT: Abusive head trauma
- 2.4. Skeletal Survey: A series of radiographs, performed systematically to cover the entire skeleton or the anatomic regions appropriate for the clinical indications. Utilized in CPA evaluation to assess for acute or healing fractures.
- 2.5. Fx: Fracture
- 2.6. Mayerson: Cincinnati Children's child abuse team.

3.0 GUIDELINE

- 3.1. Complete primary and secondary survey per ATLS and CCHMC guidelines
- 3.2. Refer to standardized Child Physical Abuse (CPA) Evaluation and Management Algorithm below

Child Physical Abuse (CPA) Evaluation and Management Algorithm



*Unstable children are managed according to ATLS and/or PALS protocols and may re-enter this algorithm once life-threatening injuries addressed and physiologically stable

CPA Algorithm Appendix

<p>A: History Risk Factors</p> <ol style="list-style-type: none"> 1. History is absent or extremely vague, implausible, inconsistent with injury or developmental age or changing 2. Unwitnessed event (Note: A witnessed event is one that can be independently verified by a non-related witness) 3. Referred for suspected child abuse <p>Red Flag Factors:</p> <ol style="list-style-type: none"> 1. Delay in seeking care 2. Prior ED visit for injury 3. Prior Child Protective services involvement 4. Domestic violence in the home 5. Criminal history, substance abuse or mental health history of any adult in close contact with child 8. Negative attributes by caregiver when describing child 9. Chronic medical condition or disability 	<p>B. Physical Exam – Concerning Findings</p> <ol style="list-style-type: none"> 1. Bruise anywhere on an infant <5 mos. without confirmed trauma in public setting to account for bruising 2. Any bruise in child <4 yo in the “TEN” regions (torso, ears, neck) of FACES-p (frenulum, angle of jaw, cheek, eyelids, subconjunctivae; patterned) 3. Bruise, mark or scar in pattern that suggests being hit with an object 4. Perineal or genital injury 5. Burn injury suggestive of abuse: Heated contact of object. Scald-immersion burn 6. Any injury in a non-ambulating child 7. Unexplained injury or injury w/o history 8. Failure-to-thrive 9. Large head in children under 1 yo (>85%ile) 10. Signs of neglect (such as FTT, untreated dental caries ect.) 	<p>C. Concerning Radiology Findings</p> <ol style="list-style-type: none"> 1. Metaphyseal or corner fx 2. Rib fx (especially posterior) without adequate history 3. Any fx in a non-ambulating child (including isolated humerus or femur fx in child <18mo) 4. An undiagnosed healing fx 5. Subdural or subarachnoid hemorrhage, particularly in absence of skull fx 6. Hollow viscus injury, particularly duodenal and small bowel injury, or combined hollow viscus injury + solid organ injury <p>D. Ophthalmology</p> <p>- A dilated indirect ophthalmoscopy (provided patient has been cleared by neurosurgery and never in the ED unless significant eye trauma) should be performed in all cases of suspected abusive head trauma^E if +subdural hemorrhage or per Mayerson’s recommendations.</p> <p>-Retinal examination should ideally take place within 24-48 hours but may still add value if done later.</p>
---	--	--

<p style="text-align: center;">E. Abusive Head Trauma</p> <p>-The CDC defines abusive head trauma (AHT) as: “an injury to the skull or intracranial contents of an infant or young child (<5 years of age) due to inflicted blunt impact and/or violent shaking.” Excluded from this case definition are (1) unintentional injuries resulting from neglectful supervision and (2) gunshot, stab, or wounds from penetrating trauma.</p> <p>-The 5-point Pittsburgh Infant Brain Injury Score may help determine when to obtain a head CT on well appearing infants (age >30days, <1yo) presenting without clear history of trauma but any of the following (1) BRUE/ALTE (2) vomiting w/o diarrhea (3) seizures or seizure-like activity (4) soft tissue scalp swelling (5) bruising (6) other nonspecific neurological symptoms not described above, such as lethargy, fussiness, or poor feeding. Calculate the score by: Any skin findings (bruise, scratch, cut, swelling) (2 points), Age ≥3mos (1 point), head circumference > 85%tile (1 point) and hemoglobin <11.2 (1 point). Score ≥2 imaging recommended (sensitivity 93%, specificity 53%).</p>

4.0 REFERENCES

- 4.1 Rangel, E.L., Cook, B.S., Bennett, B.L., Shebesta, K., Ying, J., Falcone, R.A. Eliminating disparity in evaluation for abuse in infants with head injury: use of a screening guideline. *Journal of Pediatric Surgery*. 2009; 44(6): 1229-1235
- 4.2 Lane, W. G., Dubowitz, H., & Langenberg, P. (2009). Screening for occult abdominal trauma in children with suspected physical abuse. *Pediatrics*, 124(6), 1595-1602.
- 4.3 Lindberg, D. M., Shapiro, R. A., Blood, E. A., Steiner, R. D., Berger, R. P., & ExSTRA Investigators. (2013). Utility of hepatic transaminases in children with concern for abuse. *Pediatrics*, 131(2), 268-275.
- 4.4 Legano, L. A., Desch, L. W., Messner, S. A., Idzerda, S., Flaherty, E. G., & ABUSE, C. O. C. (2021). Maltreatment of children with disabilities. *Pediatrics*, 147(5).
- 4.5 Escobar, M. A., Pflugeisen, B. M., Duralde, Y., Morris, C. J., Haferbecker, D., Amoroso, P. J., ... & Pohlson, E. C. (2016). Development of a systematic protocol to identify victims of non-accidental trauma. *Pediatric surgery international*, 32(4), 377-386.
- 4.6 Pierce, M. C., Kaczor, K., Aldridge, S., O'Flynn, J., & Lorenz, D. J. (2010). Bruising characteristics discriminating physical child abuse from accidental trauma. *Pediatrics*, 125(1), 67-74.
- 4.7 Block, R. W., & Krebs, N. F. (2005). Failure to thrive as a manifestation of child neglect. *Pediatrics*, 116(5), 1234-1237.
- 4.8 Bennett, B. L., Steele, P., Dixon, C. A., Mahabee-Gittens, E. M., Peebles, J., Hart, K. W., ... & Hirsh, R. (2015). Serum cardiac troponin I in the evaluation of nonaccidental trauma. *The Journal of pediatrics*, 167(3), 669-673.
- 4.9 Wootton-Gorges, S. L., Soares, B. P., Alazraki, A. L., Anupindi, S. A., Blount, J. P., Booth, T. N., ... & Palasis, S. (2017). ACR appropriateness criteria® suspected physical abuse—child. *Journal of the American College of Radiology*, 14(5), S338-S349.
- 4.10 Riney, L. C., Frey, T. M., Fain, E. T., Duma, E. M., Bennett, B. L., & Kurowski, E. M. (2018). Standardizing the evaluation of nonaccidental trauma in a large pediatric emergency department. *Pediatrics*, 141(1).
- 4.11 Lindberg, D. M., Berger, R. P., Reynolds, M. S., Alwan, R. M., Harper, N. S., & Examining Siblings To Recognize Abuse (ExSTRA) Investigators. (2014). Yield of skeletal survey by age in children referred to abuse specialists. *The Journal of pediatrics*, 164(6), 1268-1273.
- 4.12 Parks, S. E., Annest, J. L., Hill, H. A., & Karch, D. L. (2012). Pediatric abusive head trauma: recommended definitions for public health surveillance and research.
- 4.13 Berger, R. P., Fromkin, J., Herman, B., Pierce, M. C., Saladino, R. A., Flom, L., ... & Kochanek, P. M. (2016). Validation of the Pittsburgh infant brain injury score for abusive head trauma. *Pediatrics*, 138(1).
- 4.14 Escobar Jr, M. A., Flynn-O'Brien, K. T., Auerbach, M., Tiyyagura, G., Borgman, M. A., Duffy, S. J., ... & Maguire, S. A. (2017). The association of nonaccidental trauma with historical factors, examination findings, and diagnostic testing during the initial trauma evaluation. *Journal of Trauma and Acute Care Surgery*, 82(6), 1147-1157.
- 4.15 Christian, C. W., Levin, A. V., & ABUSE, C. O. C. (2018). The eye examination in the evaluation of child abuse. *Pediatrics*, 142(2).
- 4.16 Li, S., Mitchell, E., Fromkin, J., & Berger, R. P. (2011). Retinal hemorrhages in low-risk children evaluated for physical abuse. *Archives of pediatrics & adolescent medicine*, 165(10), 913-917.
- 4.17 Bennett, B. L., Chua, M. S., Care, M., Kachelmeyer, A., & Mahabee-Gittens, M. (2011). Retrospective review to determine the utility of follow-up skeletal surveys in child abuse evaluations when the initial skeletal survey is normal. *BMC research notes*, 4(1), 1-4.
- 4.18 Pierce, M. C., Kaczor, K., Lorenz, D. J., Bertocci, G., Fingarson, A. K., Makoroff, K., ... & Leventhal, J. M. (2021). Validation of a clinical decision rule to predict abuse in young children based on bruising characteristics. *JAMA network open*, 4(4), e215832-e215832.
- 4.19 Karmazyn, B., Reher, T. A., Supakul, N., Streicher, D. A., Kiros, N., Diggins, N., ... & Radhakrishnan, R. (2022). Whole-spine MRI in children with suspected abusive head trauma. *American Journal of Roentgenology*.

5.0 APPROVALS

All revisions of this guideline are approved by the Trauma Service Department. This guideline is reviewed every three years or sooner if deemed necessary. Policy authority for this document resides with the Trauma Service Department. This guideline is approved by the Trauma Service Manager and the Director of Trauma Services.

HISTORY
Original Date
02/2008
Revision Dates:
11/10, 06/18, 03/20, 10/20, 07/21, 01/22, 02/22
Review Dates:
04/15