Pediatric Non-Accidental Trauma Clinical Pathway

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Outcomes/Goals	• Define a clear workflow for suspected or confirmed pediatric non-accidental trauma.
Inclusion Criteria	Patients from birth through age 18 with suspected or confirmed non-accidental trauma
Exclusion Criteria	Patients who are clinically unstable should be resuscitated prior to use of this pathway. For patients presenting with suspected sexual assault, reference the sexual assault pathway.
NURSE Documentation	• Chief complaint • Onset of symptoms • Full set of vitals including temperature • Document Legal decision maker • ESI Triage Level 2 if NAT known or suspected
INTERVENTIONS	• Undress and gown patient to facilitate thorough exam, Place IV and collect urine prn
PHYSICIAN (LIP)	
Evaluation	History* and Undressed Physical Exam** w/Skin Survey
DIAGNOSTICS **#Note: Skeletal survey requires daytime radiology. Admit for skeletal survey if presenting at night.**	**LABS AND IMAGING SHOULD BE DISCUSSED WITH SCAN PROVIDER** **Initial Labs:** CBC w/diff, CMP, Lipase, Urinalysis, Urine Toxicology screen **Additional Labs:** - If bruising or concern for intracranial injury- Coagulation Panel (Consider von Willebrand panel, Factor IX, Platelet Function Assay. If intracranial hemorrhage- consider Factor XIII in addition to above) - If fracture- Calcium, Phosphorous, PTH, Vit D 25-OH - If chest or abdominal injury OR ill appearance AND >3 months- Troponin - If altered mentation consider other toxicology labs- ETOH, Acetaminophen, Salicylates **Imaging[7, 8, 9] ***** <6 months - Mandatory Skeletal Survey # and Neuro Imaging 6-24 Months - Mandatory Skeletal Survey # Strongly Consider Neuro Imaging 24 months-5 years – Obtain Skeletal Survey # IF: Severe injury, high suspicion, severe developmental delay, Failure to thrive (see appendix), at request of abuse specialist Any Age - Consider head imaging for facial or head bruising or swelling, abnormal neurologic exam/seizure, recurrent vomiting, fussiness, respiratory compromise, or high suspicion. Do NOT use PECARN. Discuss with SCAN. Often CT initially, MRI may be needed later in workup. - Consider C-Spine imaging for head injury, inability to clinically clear, or high suspicion - CT Abdomen and Pelvis if concern based on H&P, AST of ALT >80 or Lipase >100
Consultation	**Mandatory** Consults for **ALL** suspected or confirmed NAT <18 years of age • Pediatric Surgery, Social work, and SCAN Team - Pediatric Emergency Medicine administrator is on call for problem solving - Alert DHS Hotline for the appropriate county of residence- Social work may help
Medication(s)	Treat pain, nausea, anxiety, and other health concerns as clinically indicated.
Disposition	1. Admit- If clinically indicated or if, in consultation with DHS and SCAN, it is determined that a patient cannot be discharged to a safe environment a. Admit to Pediatric Surgery when the injury itself warrants inpatient care. Otherwise admit to Pediatric Hospitalist (with Pediatric surgery consult). 2. Ensure appropriate calls were made to DHS and/or law enforcement and document 3. If discharging, discuss any necessary referral or follow up (see Appendix 6 b)

DCH Pediatric Non-Accidental Trauma Clinical Pathway

Key
- BRUE- (brief resolved unexplained event)
  - Infant < 1 yo stops breathing, has a change in muscle tone, pallor/cyanosis, or unresponsiveness
  - Event < 60 seconds
  - Frightening to the caregiver
- CPS- Child protective Services
- DHS - Department of Humans Services (includes child protective services)
- NAT- Nonaccidental Trauma
- SCAN - Suspected Child Abuse and Neglect
- w/o - without (i.e. without contrast)

Decision
Action
Off Pathway
Disposition

*** Concerning History Risk Factors**
- History absent, vague, changing, implausible, or clearly inconsistent with injury
- Significant story variation over time or between witnesses
- Referred for suspected child abuse
- Red Flag Factors (may be relevant in context of risk factors/injuries)
  - Unwitnessed or not publically witnessed (independently verifiable by a non-related witness) injury or neurologic event
  - Delay in seeking care
  - Prior ED visit for injury
  - Lack of regular health care
  - Domestic violence in home
  - Past or current DHS/CPS involvement
  - Premature infant (<37 weeks) and low birth weight/intra-uterine growth retardation (IUGR)
  - Chronic medical conditions

**** Concerning Physical Exam Findings**
- Bruise anywhere on an infant < 4 months without confirmed trauma in public setting to account for bruising
- Any bruise in child </=4 yo in the 'TEN' region: **T**orso (chest, abdomen, back, buttocks, genitourinary region, and hips), **E**ars and **N**eck. or FACES-p (**F**renulum, **A**ngle of jaw, **C**heek, Eyelids, **S**ubconjunctivae; P for **P**atterned
- Bruise, mark or scar in pattern that suggests being hit by an object
- Perineal or genital injury
- Burn injury suggestive of abuse: a) contact - heated contact of an object (cigarette, iron, knife against the skin or b) scald - immersion burns to hands, feet, buttocks and perineum with flexion sparing of popliteal fossa or groin (tub burn)
- Any injury in a non-mobile child
- Unexplained injury or injury without history
- Failure-to-thrive (by growth charts; see definition)
- Large head in children under 1 yo (by occipitofrontal circumference > 85th%ile)
- Signs of neglect (e.g. untreated dental caries)

***** Concerning Imaging Findings**
- Metaphyseal or corner fracture
- Rib fractures (especially posterior) in any child < 3 years old
- Any fracture in a non-ambulating child
- An undiagnosed healing fracture
- Subdural or subarachnoid hemorrhage on neuro-imaging, particularly in absence of skull fracture in child < 1 year
- Isolated humerus or femur fracture in child <18 months without public trauma to account for it
- Hollow viscus injury, particularly duodenal/small bowel injury, in children <4 years, or combined hollow viscus + solid organ injury

Traumatic Injury, Burn, New Neurologic Deficit (Including BRUE), or report of NAT

Clinically Stable?
- Yes → • ESI 2 • Room immediately
- No → ESI 1 or 2 based on illness severity, medical management for stabilization. Return to Pathway when medically stable.

History* and Undressed Physical Exam** w/Skin Survey (see Appendix 1)

Suspected or Confirmed NAT
- No → Usual Management

If concern for sexual assault see separate pathway

Labs- LABS AND IMAGING SHOULD BE DISCUSSED WITH SCAN PROVIDER
- **CBCw/diff**
- **CMP**
- **Lipase**
- **Urinalysis**
- **Urine Toxicology screen**
- If bruising or concern for intracranial injury- **Coag Panel etc. based on SCAN recommendation**
- If fracture- **Calcium, Phosphorous, PTH, Vit D 25-OH**
- If chest or abdominal injury OR ill apearance AND >3 months- **Troponin**
- If altered mentation consider other toxicology labs- **ETOH, Acetaminophen, Salycilates**

Imaging
- **<6 months** - Mandatory Skeletal Survey# and Neuroimaging (CT often prefered to MRI)
- **6-24 Months** - Mandatory Skeletal Survey# (stongly consider Neuroimaging)
- **24 months-5 years** - Obtain Skeletal Survey# IF: Severe injury, high suspicion, severe developmental delay, Failure to thrive (see Appendix 2), if requested by abuse specialist
- **Any Age**:
  - Consider neuroimaging for facial or head bruising or swelling, abnormal neurologic exam/seizure, recurrent vomiting, fussiness, respiratory compromise, or high suspicion. Children <12 months may not show clinical signs of head injury. Do NOT use PECARN. Discuss CT vs MRI w/SCAN.
  - Consider C-Spine stabilization/imaging for head injury, inability to clinically clear, or high suspicion
  - CT Abdomen and Pelvis if concern based on H&P, AST of ALT >80 or Lipase >100

Other imaging as clincially indicated

Consult- Timing will vary based on level of concern and workup findings
- **Mandatory:** Consults for **ALL** suspected or confirmed NAT <18 years of age
  - Pediatric Surgery consult or Trauma Activation if indicated
  - Social work
  - SCAN Team
  - Alert DHS Hotline for the appropriate county of residence- Social work may help
- Any other clinically indicated specialist service- Consider ophthalmology

Concerning workup/Imaging Findings? ***
- Yes → Admission indicated based on clinical findings alone?
  - Yes → **Admit**
    - Determine appropriate level of care (Pediatric Medicine, Surgery, or PICU, etc)
    - Child abuse team, trauma team, and DHS MUST be aware of patient
    - **See Appendix 6 for disposition details**
  - No → Discuss disposition plan with all involved consulting services
- No → NAT **NOT** ruled out → Discuss disposition plan with all involved consulting services

Are the following true?
- Unanimous agreement between all involved physician teams and social work on discharge with reliable close follow up
- Verifiable safe home or alternative identified by social worker, DHS, and/or Law enforcement

- Yes → **Discharge:** Home or alternative if safe
  - Arrange close follow up including **contacting the primary doctor** and documenting plan for follow up with various teams including SCAN, trauma, and other consultants
  - If skeletal survey done- repeat needs to be completed 2 weeks from initial study
  - Inform DHS for the county of residence
  - **See Appendix 6 for disposition details**
- No → **Admit**

Appendix

1. Clinician Provider: Recommended Physical Examination:
   See Appendix 5 for details on photography
   a. Skin
      i. Inspect all areas with child unclothed/in gown
      ii. Document bruises, petechiae, abrasions, lacerations, scarring pattern injuries (bite marks or suction bruises), other marks. Note distinct shapes of recognizable objects, patterns, distribution, and concerning areas of injury (eg, non-exposed areas such as buttocks, thighs, genitals, ears, and frenulum). Whenever possible document with photographs and include a reference for measurement in the image. See Appendix 5 for details on photography.
   b. Eyes.
      i. If abusive head trauma is suspected, consider fundoscopic exam/ultrasound or consult ophthalmology during hospital stay. See Appendix 3 for more detail.
   c. Oral Exam
      i. Document lacerations, abrasions, petechiae, ecchymoses
      ii. Check mucosa, palate, upper and lower frenula, tongue, gums, lips, teeth for signs of injury
   d. Abdomen
      i. Look for bruises, abrasions; consider associated intra-abdominal injury
   e. Anogenital Exam – General
      i. An external anterior and posterior genital exam should be performed. If concerned for sexual assault is present, please reference the DCH Pediatric Sexual Assault Pathway
2. Failure to Thrive (FTT)
   a. The American Academy of Pediatrics defines FTT as "a significantly prolonged cessation of appropriate weight gain compared with recognized norms for age and gender after having achieved a stable pattern (eg, weight-for-age decreasing across 2 major percentile channels from a previously established growth pattern; weight-for-length < 80% of ideal weight). This is often accompanied by normal height velocity. Despite these accepted definitions, caution must be applied when diagnosing FTT based on percentile shifts, because growth variants are common. **Actual weight <70% of predicted weight-for-length requires urgent attention.**
3. Indications for Ophthalmology Consult
   a. Dilated ophthalmologic exam should performed selectively for children with suspected abusive head trauma in high suspicion or unclear situations provided the neurosurgical situation permits. Patients at highest risk for retinal findings most commonly have intracranial injury on neuroimaging, particularly subdural hemorrhage. Isolated skull fracture does not appear to correlate with risk for retinal findings.
   b. A child considered low risk for retinal hemorrhages (no intracranial hemorrhage, normal mental status, and no head or facial bruising) does not automatically require a dilated ophthalmological examination but should be at the discretion of the treating team.
   c. When indicated, retinal examination should ideally take place within 24-48 hours but may still add value if done later.
4. Oregon Strangulation Forensic Evidence Kit (SKIT):
   IP Consult to RSI/SANE RN
   Can be part of sexual assault work up or alone
   http://oregonsatf.org/strangulation-forensic-evidence-kit/
   Just in time Training Video if SANE RN not available: https://www.youtube.com/watch?v=a-x2JU6YAE47
   Each kit contains the necessary documentation, forensic evidence collection swabs, and imaging recommendations for the provider.

5. Photographic Evidence Collection (Clinical Provider)
   a. Photographs of sensitive areas such as genitals are recommended to be taken with digital camera and uploaded in secure server (OnBase) rather than in patient's chart. If bruises are extensive, digital camera and OnBase may be best. Haiku is useful for isolated skin findings which can then be viewed remotely by SCAN provider when consulted by phone.

b. Photographs should be collected for all suspected or confirmed physical abuse documentation.
c. Photographs should be obtained of any visualized marks, bruises, or other injuries.
d. If there is concern for sexual assault is present, please reference the DCH Pediatric Sexual Assault Pathway for detail of photographic requirements

6. Disposition and Follow-up:
    a. Admit: if clinically indicated or unable to arrange safe discharge plan to which all teams can agree unanimously.
        i. Admit to Pediatric Surgery when the injury itself warrants inpatient care. Otherwise admit to Pediatric Hospitalist (with Pediatric surgery consult).
    b. Discharge: If in consultation with DHS, it is determined that a patient can be discharged to a safe environment with reliable follow up:
        i. Ensure appropriate calls were made to DHS and/or law enforcement and document appropriately in the medical chart.
        ii. Arrange appropriate medical follow-up for primary care, physical injuries, and counseling
        iii. Discuss with SCAN provider whether other follow up or referral such as patient referral to the appropriate county Child Advocacy Center is necessary.

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Revision History Table

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