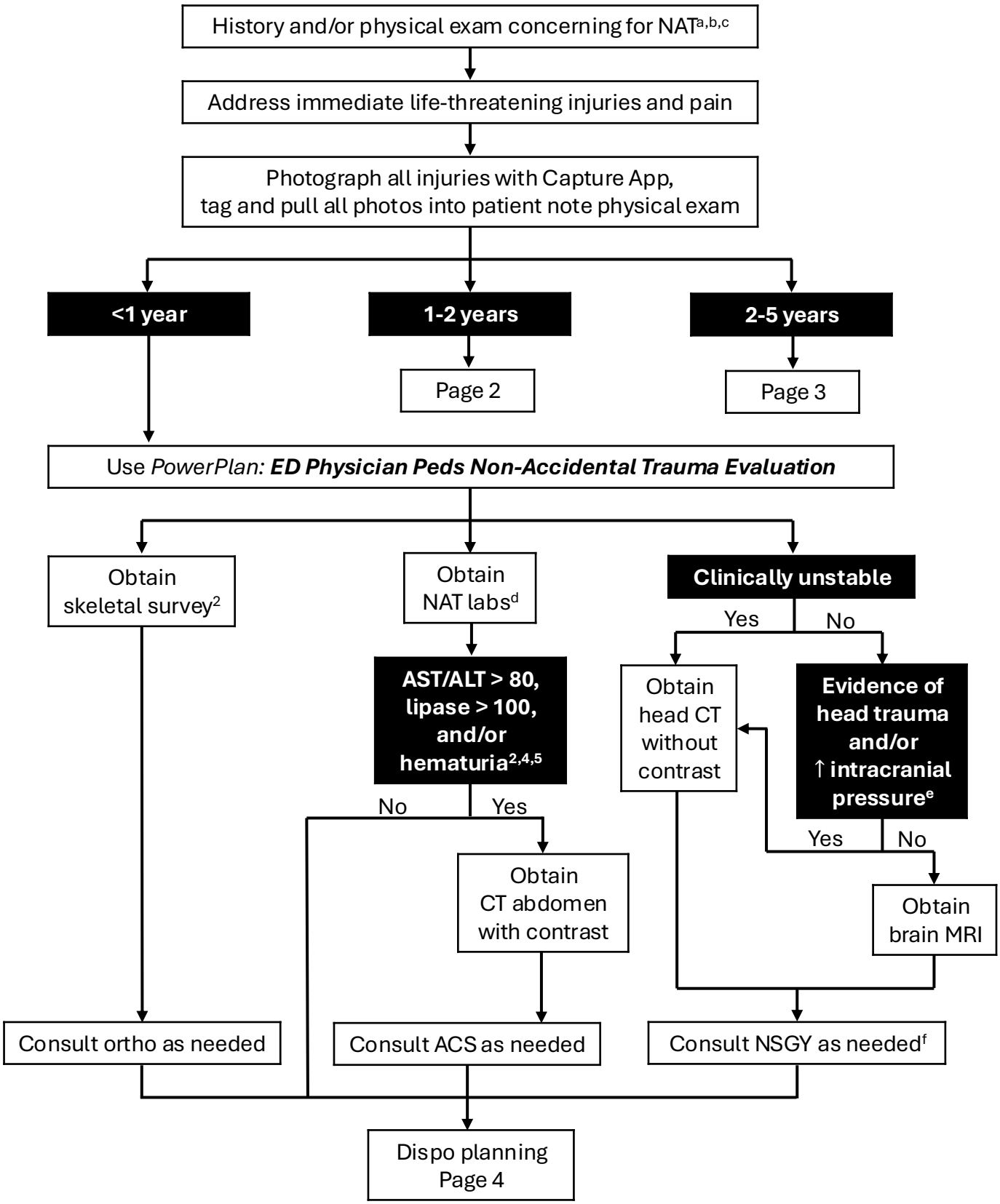
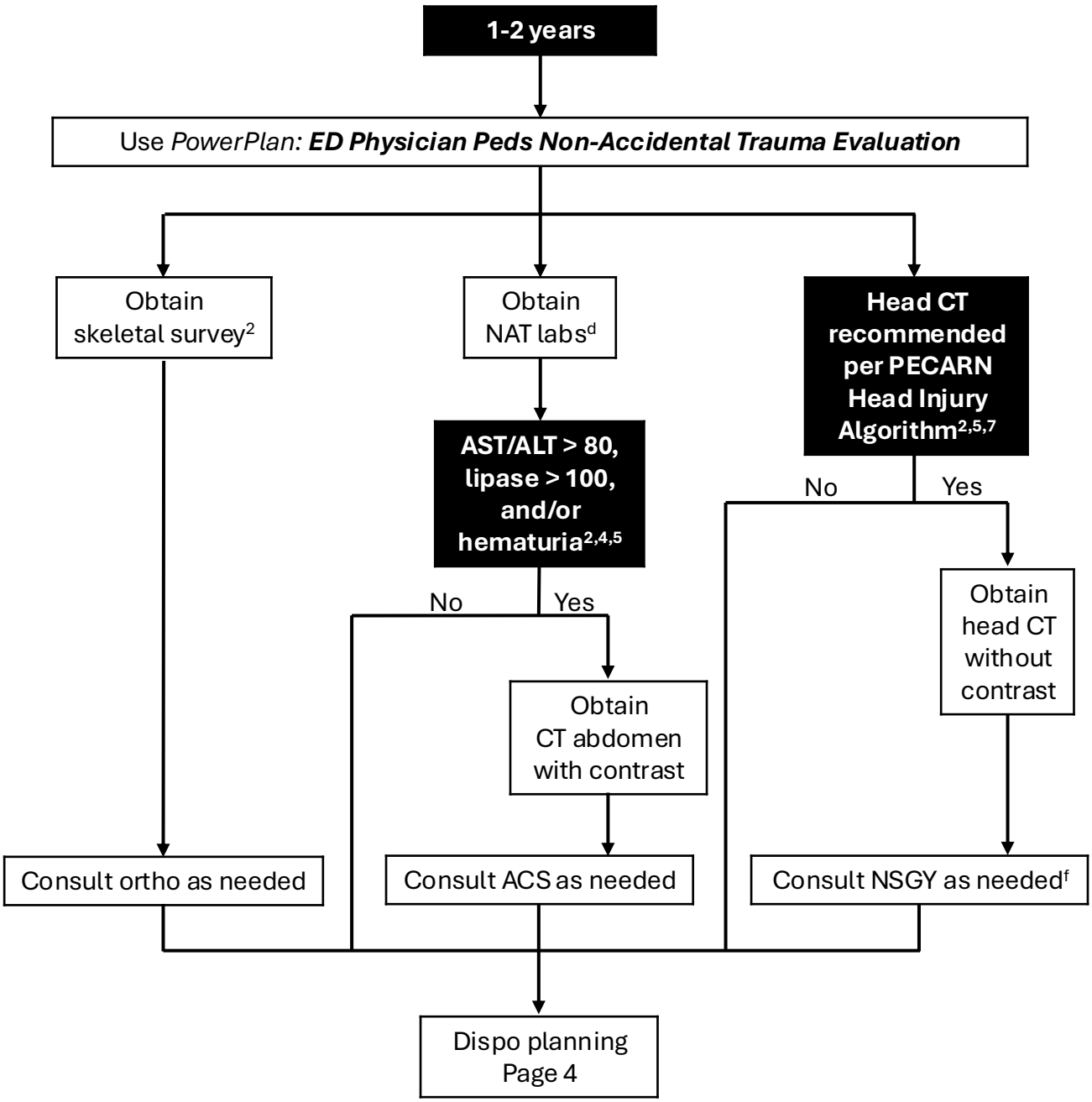
Non-Accidental Trauma (NAT) Evaluation & Management




1-2 years
Use *PowerPlan*: **ED Physician Peds Non-Accidental Trauma Evaluation**
Obtain skeletal survey[2]
Obtain NAT labs[d]
Head CT recommended per PECARN Head Injury Algorithm[2,5,7]
AST/ALT > 80, lipase > 100, and/or hematuria[2,4,5]
No
Yes
No
Yes
Obtain CT abdomen with contrast
Obtain head CT without contrast
Consult ortho as needed
Consult ACS as needed
Consult NSGY as needed[f]
Dispo planning
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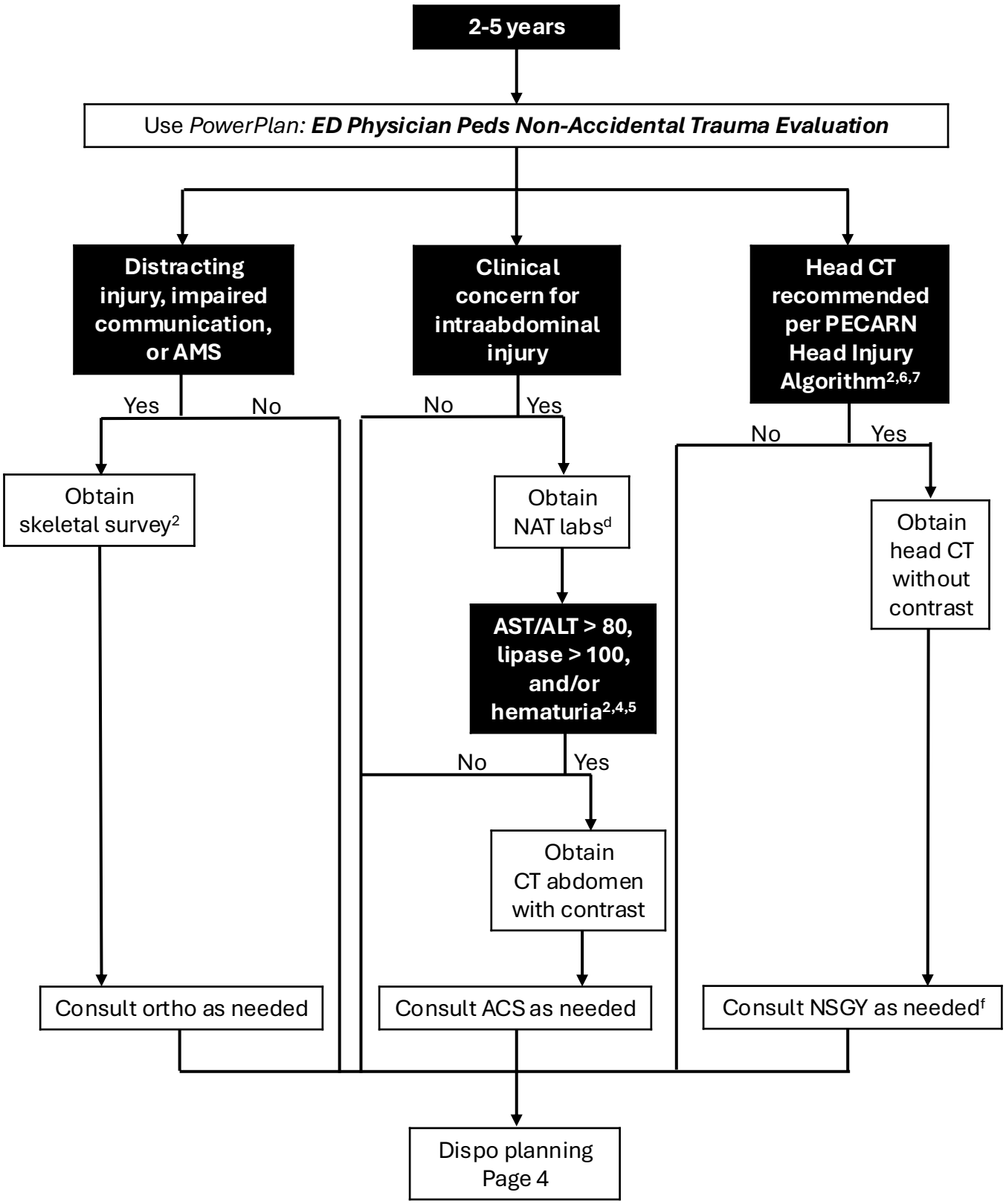
2-5 years
Use *PowerPlan*: **ED Physician Peds Non-Accidental Trauma Evaluation**
Distracting injury, impaired communication, or AMS
Clinical concern for intraabdominal injury
Head CT recommended per PECARN Head Injury Algorithm[2,6,7]
Yes
No
No
Yes
No
Yes
Obtain skeletal survey[2]
Obtain NAT labs[d]
Obtain head CT without contrast
AST/ALT > 80, lipase > 100, and/or hematuria[2,4,5]
No
Yes
Obtain CT abdomen with contrast
Consult ortho as needed
Consult ACS as needed
Consult NSGY as needed[f]
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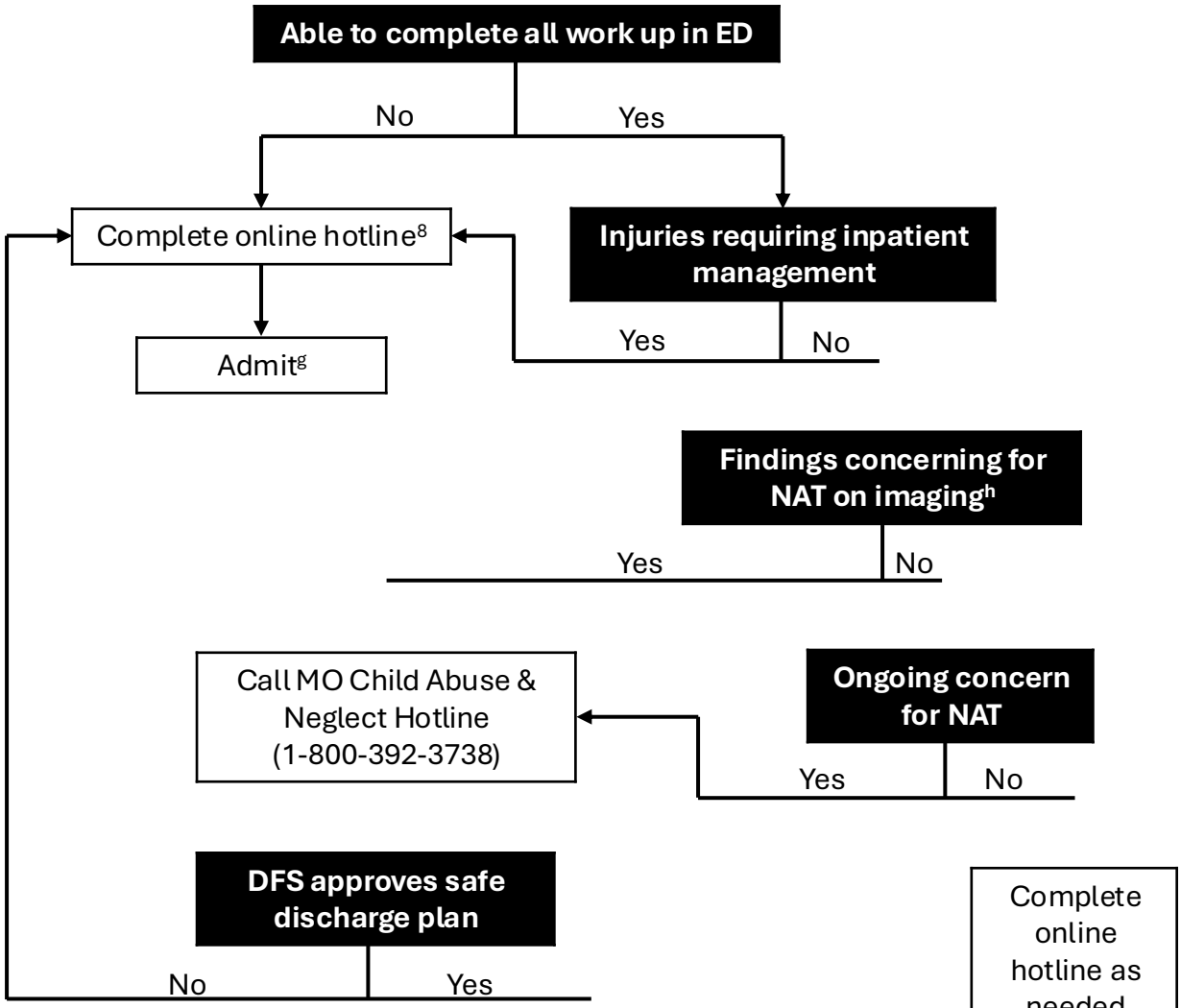

Use PowerPlan: ***ED Physician Peds Non-Accidental Trauma Evaluation*** to order 2 week follow up with skeletal survey as indicated

Primary and/or specialist MD follow up as needed

Discharge to DFS-approved caregiver with safety plan

*If a family threatens or attempts to abscond with the child, see indications and process for MD taking emergency custody of a child[i]

Footnotes:

a. Inclusion criteria:
   i. Children age 0-5 years with concern for NAT based on history or physical exam
   ii. May also apply to siblings of abused children
   iii. If low concern for abuse (e.g. single injury with plausible accidental mechanism but social concerns, or historical/social concerns for possible abuse without identified injury), obtaining only a skeletal survey in children < 2 years with no further work up may be considered. If occult injuries are found on skeletal survey, further NAT work up (based on patient age) is needed.[1]
   iv. If unsure, consult on-call child abuse specialists at KC Children's Mercy [*MU regional referral center for NAT (1-800-GO-MERCY)] or St. Louis Children's Hospital (1-800-678-HELP)

b. Historical elements concerning for NAT:[2]
   i. Inconsistent or no clear history of injury
   ii. Suspicious unwitnessed injury or injury from lack of supervision
   iii. Delay in seeking medical care
   iv. Prior ED visits for injury
   v. Illegal drug exposure or abuse in the home

c. Physical exam elements concerning for NAT:[2]
   i. Bruising
      i. TEN-FACES (torso, ears, neck, frenulum, angle of jaw, cheek, eyelids, subconjunctiva)
      ii. Infants <4-6 months of age
      iii. Patterned bruising (i.e. loop marks, handprints, bite marks)
   ii. Scars in patterns that suggest being struck with an object
   iii. Patterned burns (i.e. cigarette or cigarette lighter burns) or burns suggestive of intentional immersion (i.e. stocking/glove distribution)
   iv. Unexplained torn frenulum or other oral injury
   v. Any inadequately explained genital injury

d. NAT trauma labs:[2,4,5]
   i. CBC, CMP, lipase, bagged UA, PT/PTT if bruising
   ii. If bruising/petechiae or intracranial hemorrhage and concern for underlying bleeding disorder:
      i. von Willebrand Disease Profile, platelet function screen, fibrinogen level, factor VII assay, factor IX assay
   iii. If multiple fractures and concern for metabolic bone disease:
      i. 25-Hydroxyvitamin D2 and D3-Mayo, phosphorus level, intact PTH
   iv. If concern for toxic ingestion:
      i. Drug test urine with positives confirmed, drug test blood – Tylenol, Ethanol, Salicylate as needed

e. Evidence of possible head trauma and/or increased intracranial pressure:[2]
   i. Facial bruising, scalp hematoma, altered mental status, vomiting, Cushing's triad (hypertension, bradycardia, hypopnea/apnea)
   ii. Consider obtaining C-spine imaging

f. Dilated ophthalmologic exam is NOT indicated in children evaluated for NAT in whom there is an absence of neuroimaging findings or other evidence of head trauma.[9] If evidence of abusive head trauma, ophtho consult can be deferred to inpatient team.

g. Admitting service will be pediatrics unless consulting specialty service requests to be primary service with pediatric co-management .

h. Findings on imaging concerning for NAT:[2]
   i. Rib fractures
   ii. Multiple fractures
   iii. Any fracture in non-ambulatory infants/children
   iv. Metaphyseal (i.e. corner, bucket-handle) fractures
   v. Skull fractures, particularly if multiple or complicated (crossing suture lines, burst, depressed)
   vi. Intracranial hemorrhage (particularly subdural and subarachnoid hemorrhage), evidence of cerebral edema, and/or diffuse axonal injury
   vii. Intraabdominal trauma, particularly to liver, pancreas and/or bowel

Footnote (continued):

i. Indications and process for MD taking emergency custody of a child:[3]
   i. A physician may take emergency temporary custody when there is reasonable cause to believe that a child is in imminent danger of suffering serious physical harm or a threat to life as a result of abuse or neglect and such person has reasonable cause to believe the harm or threat to life may occur before a juvenile court could issue a temporary protective custody order or before a juvenile officer could take the child into protective custody.
   ii. The physician may take or retain temporary protective custody of the child without the consent of the child's parents, guardian or others legally responsible for his care.
   iii. Any physician taking a child into temporary protective custody shall immediately notify the juvenile office of the court, of the county in which the child is located, of his/her actions and shall notify CD, and shall make a reasonable attempt to advise the parents, guardians or others legally responsible for the child's care.
   iv. Such physician shall file, as soon as practicable, but no later than 12 hours, a written statement with the juvenile officer which sets forth the identity of the child and the facts and circumstances which gave such physician reasonable cause to believe that there was imminent danger of serious physical harm or threat to the life of the child.

References:

1. Emergency Department Clinical Pathway for Evaluation/Treatment of Children with Concern for Physical Abuse, Children's Hospital of Philadelphia, 2025.
2. MU Acute Care Surgery Non-Accidental Trauma Practice Management Guideline, 2025.
3. MU Abuse & Neglect – Child Abuse – Policy, 2023.
4. St. Louis Children's Hospital Guideline for the evaluation of suspected non-accidental trauma (NAT), 2023.
5. Children's Mercy Kansas City Child Physical Abuse Guideline, 2025.
6. PECARN Pediatric Head Injury/Trauma Algorithm, 2009.
7. Physical child abuse: Diagnostic evaluation and management, UpToDate, 2025.
8. MO Online System for Child Abuse & Neglect Reporting (OSCR), 2026.
9. Narang SK, et al. "Abusive head trauma in infants and children: Technical report." Pediatrics, 2025.