

## Procedure for Suspected Child Abuse Imaging “Trauma X”

### GUIDELINES:

- Every effort should be made to request studies only during normal weekday business hours between **8 AM** and **5 PM**.
- Parents may **NOT** accompany their child and /or provide restraint during a skeletal survey.
- Following completion of the study, the technologist will attempt to notify Dr. Sargent or Dr. Vaccaro or an MSK Radiologist. If neither are available and an urgent reading is needed then any Staff Radiologist may issue either a wet or final read on the study.

### IMAGES to be obtained (low noise technique):

AP, RPO, LPO AND LATERAL CHEST/THORAX	(RIB TECHNIQUE)
AP ABDOMEN/PELVIS IN FROGLEG POSITION	(BONE DETAIL)
PA HAND AND WRISTS	(EACH SIDE DONE SEPARATELY)
AP HUMERI	(EACH SIDE DONE SEPARATELY)
AP FOREARMS	(EACH SIDE DONE SEPARATELY)
AP FEMURS	(EACH SIDE DONE SEPARATELY)
AP LOWER LEGS	(EACH SIDE DONE SEPARATELY)
AP FEET	(EACH SIDE DONE SEPARATELY)
LATERAL LUMBAR SPINE	
AP CERVICAL SPINE	
TOWNE, AP, WATERS SKULL IMAGES	
LATERAL SKULL TO INCLUDE ENTIRE CERVICAL SPINE	
LATERAL FOREARMS	(EACH SIDE DONE SEPARATELY)
LATERAL KNEES	(EACH SIDE DONE SEPARATELY)
LATERAL ANKLES	(EACH SIDE DONE SEPARATELY)

## Procedure for Suspected Child Abuse Imaging “Trauma X” follow-up

### GUIDELINES:

- Every effort should be made to request studies only during normal weekday business hours between **8 AM** and **5 PM**.
- Parents may **NOT** accompany their child and /or provide restraint during a skeletal survey.
- Following completion of the study, the technologist will attempt to notify Dr. Sargent or Dr. Vaccaro. If neither are available and an urgent reading is needed then any Staff Radiologist may issue either a wet or final read on the study.

### IMAGES to be obtained (low noise technique):

AP, RPO, LPO AND LATERAL CHEST/THORAX	(RIB TECHNIQUE)
PA HAND AND WRISTS	(EACH SIDE DONE SEPARATELY)
AP HUMERI	(EACH SIDE DONE SEPARATELY)
AP FOREARMS	(EACH SIDE DONE SEPARATELY)
AP FEMURS	(EACH SIDE DONE SEPARATELY)
AP LOWER LEGS	(EACH SIDE DONE SEPARATELY)
AP FEET	(EACH SIDE DONE SEPARATELY)
LATERAL FOREARMS	(EACH SIDE DONE SEPARATELY)
LATERAL KNEES	(EACH SIDE DONE SEPARATELY)
LATERAL ANKLES	(EACH SIDE DONE SEPARATELY)

\*\*skull images will be performed if not done as part of initial study



# Trauma X (Child Abuse) Imaging Procedure


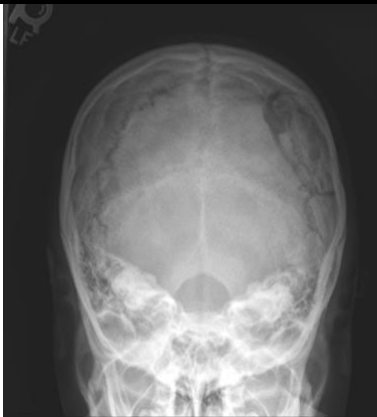

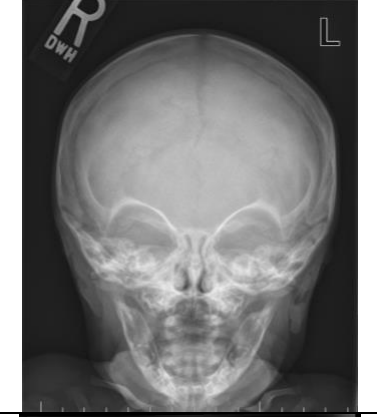


▪ **All Trauma X images must meet the following criteria:**


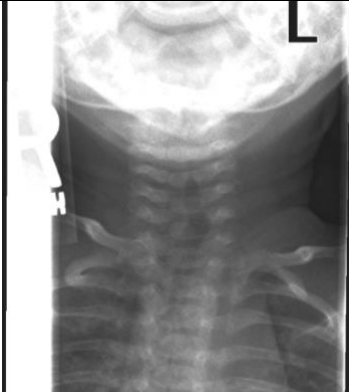



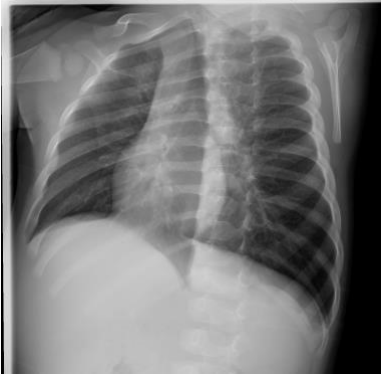
- **Lead side marker clearly visible with technologist initials included. If lead side marker is not visible, an annotation of side with initials of technologist certifying correctness of side applied before acquiring the next image.**
- **Each image must possess the essential qualities listed in this manual including image orientation.**
- **Images are listed in the suggested sequence of acquisition.**
- **Do lateral of extremity if fracture/deformity seen on AP.**
- **All images exposed using small focal spot**
- **Image Exposure Index (E.I.) approximately 200 (low noise technique)( Philips 2.0 Systems, Rm 9)**
- **Symmetrical imaging of RIGHT and LEFT sides for comparison**
- **Include the knee on the AP femur and AP Tibia/Fibula image**






▪ **The following procedures are expected:**


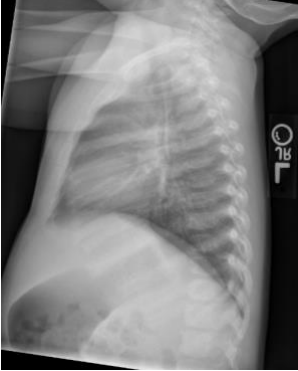




- **Collimate to the smallest area possible without sacrificing essential anatomy.**
- **Shutter to include evidence of collimation.**
- **Gonadal shielding except when essential anatomy obscured.**
- **No table pad - only unwrinkled linen/dry chux to avoid artifacts.**
- **Clothing removed - diaper removed for pelvis, femurs and lat lumbar.**
- **All items in contact with patient including hands cleaned before and after exam.**
- **Extremities to be imaged without grid (femur to foot/humerus to hand).**

## Trauma X Procedure






Immobilization/Positioning	Image	Image Essentials	Exposure Factors - 1600 speed small FS, 40" SID, 8 : 1 grid		
			NB to 6 m	6 m to 1 y	1 y to 3 y
		<p><u>Towne (AP Axial Projection)</u></p> <ul style="list-style-type: none"> <li>• Occipital bone, temporal and parietal bones visible.</li> <li>• Foramen magnum visible.</li> <li>• Entire petrous and mastoid regions visible bilaterally.</li> <li>• No evidence of head rotation visible.</li> </ul>	70 kVp 80 mA 50 ms (4 mAs)	70 kVp 125 mA 50 ms (6.25 mAs)	70 kVp 200 mA 50 ms (10 mAs)
		<p><u>AP Skull</u></p> <ul style="list-style-type: none"> <li>• Symphysis menti to skull vertex visible.</li> <li>• Entire cranium visible.</li> <li>• No rotation or motion visible.</li> </ul>	70 kVp 80 mA 50 ms (4 mAs)	70 kVp 125 mA 50 ms (6.25 mAs)	70 kVp 200 mA 50 ms (10 mAs)
		<p><u>Waters View</u></p> <ul style="list-style-type: none"> <li>• Entire frontal and maxillary sinuses, margins of both orbits and zygomatic arches visible.</li> <li>• Petrous ridges projected below maxillary sinuses.</li> <li>• No evidence of head rotation visible.</li> </ul>	70 kVp 80 mA 50 ms (4 mAs)	70 kVp 125 mA 50 ms (6.25 mAs)	70 kVp 200 mA 50 ms (10 mAs)






Immobilization/Positioning	Image	Image Essentials	Exposure Factors		
			NB to 6 m	6 m to 1 y	1 y to 3 y
		<p><u>AP Cervical Spine</u></p> <ul style="list-style-type: none"> <li>• C2 through C7 visible.</li> <li>• Medial ends of clavicles equidistant from midline.</li> </ul>	70 kVp 40 mA 50 ms (2 mAs)	70 kVp 63 mA 50 ms (3 mAs)	70 kVp 80 mA 50 ms (4 mAs)
		<p><u>AP Chest (lungs and ribs)</u></p> <ul style="list-style-type: none"> <li>• Entire both clavicles and all ribs visible.</li> <li>• 10 rib interspaces above dome of diaphragm visible.</li> <li>• No rotation or motion visible.</li> </ul>	70 kVp 40 mA 50 ms (2 mAs)	70 kVp 63 mA 50 ms (3 mAs)	70 kVp 80 mA 50 ms (4 mAs)
		<p><u>Chest (lungs and ribs) 30° RPO</u></p> <ul style="list-style-type: none"> <li>• All ribs visible bilaterally.</li> <li>• No motion visible.</li> </ul>	70 kVp 40 mA 50 ms (2 mAs)	70 kVp 63 mA 50 ms (3 mAs)	70 kVp 80 mA 50 ms (4 mAs)





Immobilization/Positioning	Image	Image Essentials	Exposure Factors		
			NB to 6 m	6 m to 1 y	1 y to 3 y
		<p><u>Chest (lungs and ribs) 30° LPO</u></p> <ul style="list-style-type: none"> <li>• All ribs visible bilaterally.</li> <li>• No motion visible.</li> </ul>	70 kVp 40 mA 50 ms (2 mAs)	70 kVp 63 mA 50 ms (3 mAs)	70 kVp 80 mA 50 ms (4 mAs)
<p><b>AP Abdomen/Pelvis</b></p> <p><b>Picture coming soon!</b></p>		<p><u>AP Abdomen/Pelvis</u></p> <ul style="list-style-type: none"> <li>• <u>DO IN FROG LEG POSITION</u></li> <li>• Entire abdomen including hemidiaphragms visible</li> <li>• Entire pelvis visible.</li> </ul>	70 kVp 40 mA 50 ms (2 mAs)	70 kVp 63 mA 50 ms (3 mAs)	70 kVp 125 mA 50 ms (6.25 mAs)
		<p><u>Lateral Lumbar Spine</u></p> <ul style="list-style-type: none"> <li>• T10 to last segment of coccyx visible.</li> <li>• No rotation visible.</li> </ul>	70 kVp 80 mA 50 ms (4 mAs)	70 kVp 125 mA 50 ms (6.25 mAs)	70 kVp 200 mA 50 ms (10 mAs)






Immobilization/Positioning	Image	Image Essentials	Exposure Factors		
			NB to 6 m	6 m to 1 y	1 y to 3 y
		<p><u>Lateral Chest/Thorax</u></p> <ul style="list-style-type: none"> <li>• Apices to posterior costophrenic angle visible.</li> <li>• No rotation or motion visible.</li> </ul>	70 kVp 40 mA 50 ms (2 mAs)	70 kVp 63 mA 50 ms (3 mAs)	70 kVp 100 mA 50 ms (5 mAs)
		<p><u>Lateral Skull</u></p> <ul style="list-style-type: none"> <li>• Entire cranium and cervical spine visible.</li> <li>• All facial bones including mandible visible.</li> <li>• No rotation or motion visible.</li> </ul>	70 kVp 40 mA 50 ms (2 mAs)	70 kVp 63 mA 50 ms (3 mAs)	70 kVp 100 mA 50 ms (5 mAs)
		<p>AP Right Femur</p> <ul style="list-style-type: none"> <li>• Entire hip and knee joints visible.</li> </ul>	40 kVp 12 mAs No grid	40 kVp 16 mAs No grid	40 kVp 20mAs No grid


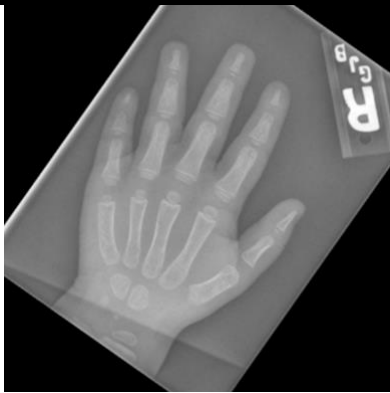






Immobilization/Positioning	Image	Image Essentials	Exposure Factors		
			NB to 6 m	6 m to 1 y	1 y to 3 y
		<p><u>AP Right Tibia/Fibula</u></p> <ul style="list-style-type: none"> <li>Entire knee and ankle joints visible.</li> </ul>	40 kVp 10 mAs No grid	40 kVp 12 mAs No grid	40 kVp 16 mAs No grid
		<p><u>AP Right Foot</u></p> <ul style="list-style-type: none"> <li>Distal tarsal bones visible.</li> <li>All metatarsal bones and phalanges visible.</li> </ul>	40 kVp 5 mAs No grid	40 kVp 5.6 mAs No grid	40 kVp 6 mAs No grid
<p><b>Lateral Ankle</b></p> <p><b>Picture coming soon!</b></p>		<p><u>Lateral Right Ankle</u></p> <ul style="list-style-type: none"> <li>Entire ankle joint visible.</li> </ul>	40Kvp 6 mAs No grid	40Kvp 7 mAs No grid	40Kvp 8 mAs No grid



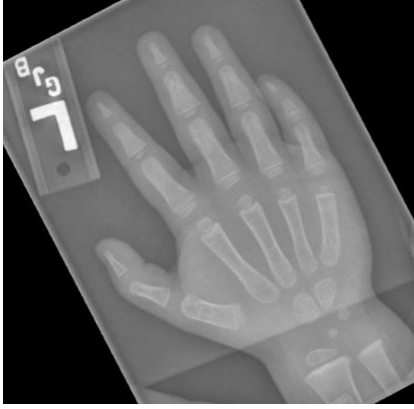
Immobilization/Positioning	Image	Image Essentials	Exposure Factors		
			NB to 6 m	6 m to 1 y	1 y to 3 y
<p><b>Lateral Knee</b></p> <p><b>Picture coming soon!</b></p>		<p><u>Lateral Right Knee</u></p> <ul style="list-style-type: none"> <li>Entire Knee joint visible.</li> </ul>	40Kvp	40Kvp	40Kvp
		<p><u>AP Left Femur</u></p> <ul style="list-style-type: none"> <li>Entire hip and knee joints visible.</li> </ul>	40 kVp	40 kVp	40 kVp
		<p><u>AP Left Tibia/Fibula</u></p> <ul style="list-style-type: none"> <li>Entire knee and ankle joints visible.</li> </ul>	40 kVp	40 kVp	40 kVp
			10 mAs	12 mAs	16 mAs
			No grid	No grid	No grid

Immobilization/Positioning	Image	Image Essentials	Exposure Factors		
			NB to 6 m	6 m to 1 y	1 y to 3 y
		<p><u>AP Left Foot</u></p> <ul style="list-style-type: none"> <li>• Distal tarsal bones visible.</li> <li>• All metatarsal bones and phalanges visible.</li> </ul>	40 kVp 5 mAs No grid	40 kVp 5.6 mAs No grid	40 kVp 6 mAs No grid
<p><b>Lateral Ankle</b></p> <p>Picture coming soon!</p>		<p><u>Lateral Left Ankle</u></p> <ul style="list-style-type: none"> <li>• Entire ankle joint visible.</li> </ul>	40Kvp 6 mAs No grid	40Kvp 7 mAs No grid	40Kvp 8 mAs No grid
<p><b>Lateral Knee</b></p> <p>Picture coming soon!</p>		<p><u>Lateral Left Knee</u></p> <ul style="list-style-type: none"> <li>• Entire Knee joint visible.</li> </ul>	40Kvp 10 mAs No grid	40Kvp 11 mAs No grid	40Kvp 12 mAs No grid

Immobilization/Positioning	Image	Image Essentials	Exposure Factors		
			NB to 6 m	6 m to 1 y	1 y to 3 y
		<p><u>AP Right Humerus</u></p> <ul style="list-style-type: none"> <li>• Entire shoulder and elbow joints visible.</li> </ul>	40 kVp 8 mAs No grid	40 kVp 10 mAs No grid	40 kVp 12 mAs No grid
		<p><u>AP Right Forearm</u></p> <ul style="list-style-type: none"> <li>• Entire elbow and wrist joints visible.</li> </ul>	40 kVp 8 mAs No grid	40 kVp 9 mAs No grid	40 kVp 10 mAs No grid
<p><b>Lateral Forearm</b> <b>Picture coming soon!</b></p>		<p><u>Lateral Right Forearm</u></p> <ul style="list-style-type: none"> <li>• Entire elbow and wrist joints visible.</li> </ul>	40Kvp 8 mAs No grid	40Kvp 9 mAs No grid	40Kvp 10 mAs No grid

Immobilization/Positioning	Image	Image Essentials	Exposure Factors		
			NB to 6 m	6 m to 1 y	1 y to 3 y
		<p><u>PA Right Hand/Wrist</u></p> <ul style="list-style-type: none"> <li>• Wrist joint visible.</li> <li>• All metacarpal bones and phalanges visible without foreshortening or superimposition.</li> </ul>	40 kVp 5 mAs No grid	40 kVp 5.6 mAs No grid	40 kVp 6 mAs No grid
		<p><u>AP Left Humerus</u></p> <ul style="list-style-type: none"> <li>• Entire shoulder and elbow joints visible.</li> </ul>	40 kVp 8 mAs No grid	40 kVp 10 mAs No grid	40 kVp 12 mAs No grid
		<p><u>AP Left Forearm</u></p> <ul style="list-style-type: none"> <li>• Entire elbow and wrist joints visible.</li> </ul>	40 kVp 8 mAs No grid	40 kVp 9 mAs No grid	40 kVp 10 mAs No grid

			Exposure Factors
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Immobilization/Positioning	Image	Image Essentials	NB to 6 m	6 m to 1 y	1 y to 3 y
<p><b>Lateral Forearm</b></p> <p><b>Picture coming soon!</b></p>		<p><u>Lateral Left Forearm</u></p> <ul style="list-style-type: none"> <li>Entire elbow and wrist joints visible.</li> </ul>	<p>40Kvp</p> <p>8 mAs</p> <p>No grid</p>	<p>40Kvp</p> <p>9 mAs</p> <p>No grid</p>	<p>40Kvp</p> <p>10 mAs</p> <p>No grid</p>
		<p><u>PA Left Hand/Wrist</u></p> <ul style="list-style-type: none"> <li>Wrist joint visible.</li> <li>All metacarpal bones and phalanges visible without foreshortening or superimposition.</li> </ul>	<p>40 kVp</p> <p>5 mAs</p> <p>No grid</p>	<p>40 kVp</p> <p>5.6 mAs</p> <p>No grid</p>	<p>40 kVp</p> <p>6 mAs</p> <p>No grid</p>