



# Assessment of the Pediatric Patient

3<sup>rd</sup> Edition

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## Assessment



### • Objectives

- Describe the steps in trauma assessment and management
- Describe the ITLS Primary Survey and explain how it relates to the Rapid Trauma Survey and the Focused Exam
- Describe when the ITLS Primary Survey can be interrupted
- Describe when critical interventions should be made and where to make them
- Identify which patients have critical conditions and describe how they should be managed
- Describe the ITLS Secondary Survey
- Describe the ITLS Ongoing Exam

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## Assessment



### • Case Study Scenario

- You have been called to the home of an 18-month-old child who climbed out of her crib and fell
- You are told the toddler is crying and appears to be in pain



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# Assessment



## • You arrive on the scene

- What sort of injuries should you expect from this mechanism?
- How does evaluation and treatment of a child differ from an adult?



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# Assessment



## • Preparation for Assessment of the Pediatric Patient

- Trauma is the leading cause of death among children over the age of 1 year
- A standard organized approach is needed to identify life-threatening injuries
- You need to recognize the differences between children and adults
- Before arriving at the scene, prepare the necessary (appropriately sized) equipment



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# Assessment



## • Preparation for Assessment of the Pediatric Patient

- Remember the “confident approach” is dependent on your understanding of:
  - Child development
  - Physiological differences
- Be objective, yet caring
- Utilize parents, toys, objects, to ease the child's fear



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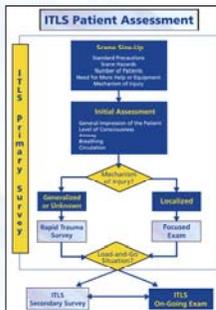
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# Assessment



## Standard Approach to Patient Assessment

- ITLS Primary Survey
  - Scene Size-Up
  - Initial Assessment
  - Mechanism of Injury
    - Rapid Trauma Survey or Focused Exam
  - Critical Transport Decision and Interventions
- ITLS Secondary Survey
- ITLS On-Going Exam



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# Assessment



- ITLS Primary Survey
- Scene Size-Up
  - Standard Precautions
  - Scene Hazards
    - Look at the entire situation
    - Think about potential dangers
  - Number of Patients
  - Need More Help or Equipment
  - Mechanism of Injury
    - Blunt vs. penetrating
    - Distance of fall; surface struck
    - Speed of vehicle; use of restraint devices



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# Assessment



- Scene Size-Up
  - Establish verbal relationship with parent/caregiver
    - Introduce yourself
    - Obtain a brief history
      - Parents know what is normal for their child
      - Ask for pertinent medical history
    - Keep them informed
    - Explain what you are doing and why
    - Continue on to child's assessment promptly
    - BE CONFIDENT!



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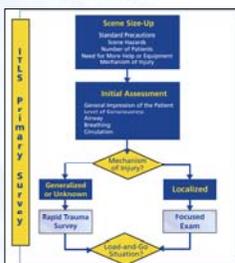
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# Assessment



## • ITLS Primary Survey

- Identify life-threatening injuries
- Determine the need for immediate transport
- Complete in 2 minutes or less
- Do not interrupt unless:
  - Obstructed airway
  - Cardiopulmonary arrest
  - Scene becomes too unsafe to continue



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# Assessment



## • Initial Assessment

- Identify all life-threatening conditions by evaluating:
  - General Impression
  - Level of Consciousness
  - Airway
  - Breathing
  - Circulation



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# Assessment



## • General Impression

- "Street smarts"
- Trust your gut feeling
- Ability improves with experience



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# Assessment



## • Level of Consciousness

- A - Alert
- V - responds to Verbal
- P - responds to Pain
- U - Unresponsive
- Recognize parents?
  - Parents can usually tell when their child has subtle mental changes



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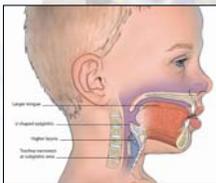
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# Assessment



## • Airway

- Assume cervical spinal injury depending on MOI
  - Manually maintain spinal motion restriction
- Assess the airway
  - Open with the modified jaw thrust
  - Look, listen, and feel
    - Upper airway occlusion
    - Apnea
    - Stridor
  - Have suction available



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# Assessment



## • Breathing

- Assess:
  - Rate
    - Compare to normal rate for child's age group
  - Quality
  - Oxygenation
  - Breath Sounds
- Assist ventilation if child shows signs of respiratory distress:
  - BVM ventilation
  - Supplemental oxygen



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# Assessment



## • Circulation

- Assess:
  - Pulse rate
    - Peripheral
    - Central
  - Quality of pulses
  - Capillary refill time
- Indicators of shock:
  - Tachycardia
  - Weak peripheral pulses
  - Prolonged central CRT
- Stop any bleeding
- Keep child warm



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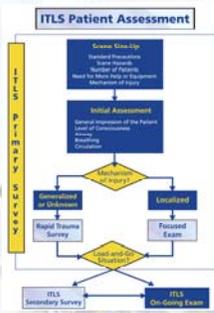
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# Assessment



## • Rapid Trauma Survey or Focused Exam

- Rapid Trauma Survey
  - Generalized or significant MOI
  - Unknown MOI or unconscious patient
  - Possibility of multi-system injury
- Focused Exam
  - Localized or insignificant MOI
  - No possibility of multi-system injury



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# Assessment



## • Rapid Trauma Survey

- Quick head-to-toe exam
  - Head
  - Neck
  - Chest
  - Abdomen
  - Pelvis
  - Extremities
- Brief neurological exam
- Adequately expose the patient
  - You can't assess what you can't see!



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# Assessment



## • Rapid Trauma Survey

### – DCAP BTLS

- **Head:** Bleeding, fluid from ears, deformity
- **Neck:** Obvious trauma, neck vein distention, tracheal deviation
- **Chest:**
  - **LOOK:** For asymmetry, bruising, penetrations
  - **LISTEN:** Breath sounds present? Equal?
  - **FEEL:** For instability, crepitus
- **Abdomen:** Tenderness, rigidity, distention
- **Pelvis:** Tenderness, instability, crepitus (TIC)
- **Extremities:** Deformity, swelling, presence of pulses, distal motor and sensory



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# Assessment



## • Brief Neurological Exam

- Identify possible increased intracranial pressure
- Check the pupils
- Take Glasgow Coma Score
  - Modified or Pediatric score
  - Eye Opening
  - Verbal Response
  - Motor Response
    - Of extremities
    - Note posturing
- Look for signs of Cushing's reflex



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# Assessment



## • Pediatric Glasgow Coma Scale

	Patient < 2 years	Patient > 2 years	
Eye Opening	Spontaneous	Spontaneous	4
	To speech	To voice	3
	To pain	To pain	2
	None	None	1
Verbal Response	Coo, babbles	Oriented	5
	Cries irritably	Confused	4
	Cries to pain	Inappropriate words	3
	Moans to pain	Incomprehensible	2
	None	None	1
Motor Response	Normal movements	Obeys commands	6
	Withdraws to touch	Localizes pain	5
	Withdrawal-pain	Withdrawal-pain	4
	Abnormal flexion	Flexion-pain	3
	Abnormal extension	Extension-pain	2
	None	None	1
<b>Total = Eye + Verbal + Motor</b>			

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# Assessment



## • SAMPLE History

- Obtain while packaging patient:
  - S – Symptoms
  - A – Allergies
  - M – Medications
  - P – Past illnesses
  - L – Last meal (what and when)
  - E – Events preceding injury



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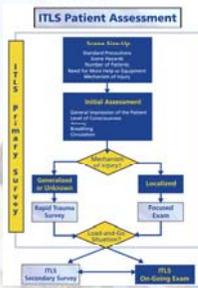
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# Assessment



## • Transport Decision

- Load-and-Go Situations
  - Dangerous MOI
  - Unstable airway or obvious respiratory difficulty
  - Shock or uncontrolled bleeding
  - Altered mental status
  - Poor general impression



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# Assessment



## • Critical Interventions

- At the scene:
  - Initial airway management
  - Administering oxygen
  - Assisting ventilation
  - Beginning CPR
  - Controlling major external bleeding
  - Sealing sucking chest wounds
  - Decompressing tension pneumothorax
  - Stabilizing impaled object



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# Assessment



## • Critical Interventions

- During transport:
  - Orotracheal intubation
  - Insertion of IV or IO lines
  - Decompression of tension pneumothorax
  - Splint and bandage



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# Assessment



## • Packaging for Transport

- Airway/breathing
  - Maintain during packaging and transport
- Spinal motion restriction
  - Log-roll onto spinal motion restriction device
  - Apply cervical collar
  - Secure to backboard



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# Assessment



## • Contact Medical Direction

- Estimated time of arrival (ETA)
- Condition of the patient
  - Mechanism of injury
  - Description of life-threatening injuries
  - Interventions performed
- Any special needs on arrival



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# Assessment



## • ITLS Secondary Survey

- Comprehensive exam looking for ALL injuries
- Usually performed en route to the hospital on critical patients
  - At the scene for stable patients
- May not be time to perform if transport time is short



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# Assessment



## • ITLS Secondary Survey Components

- Repeat Initial Assessment
  - Finish SAMPLE history
- Check vitals and LOC
- Apply monitors as available
- Neurological Exam
- Detailed Head-to-Toe Exam
  - Head
  - Neck
  - Chest
  - Abdominal
  - Back
  - Extremity



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# Assessment



## • ITLS Secondary Survey

- Head Examination
  - DCAP BTLS
  - Fluid/blood from nose or ears
  - Raccoon eyes, Battle's sign
  - Check fontanel (if applicable)
  - Pupillary size and response
  - Mouth and teeth
- Neck Examination
  - DCAP BTLS
  - Cervical spine tenderness
  - Neck veins - may be difficult to assess
  - Trachea position- may be difficult to assess



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# Assessment



## • ITLS Secondary Survey

- Chest Examination
  - DCAP BTLS
  - Rise and fall
  - Symmetry
  - Breath sounds
- Abdomen Examination
  - DCAP BTLS
  - Grunting respirations
  - Distention
  - Pain, tenderness
  - Rigidity, guarding
  - Pelvic stability



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# Assessment



## • ITLS Secondary Survey

- Extremity Exam
  - DCAP BTLS
  - Neurovascular status below site of injury
    - P – Pulse
    - M – Motor function
    - S – Sensation
  - Swelling
  - Pain or tenderness
  - Check dressings
  - Package amputated parts



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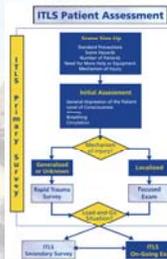
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# Assessment



## • ITLS Ongoing Exam

- Check for changes in condition
- May replace ITLS Secondary Survey if transport time is short
- Perform:
  - Every 5 minutes for critical patient
  - Every 15 minutes for stable patient
  - Every time child is moved, condition worsens, or intervention is performed



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# Assessment



## • ITLS Ongoing Exam

- **Reassess:**
  - Mental status
  - ABCs
  - Vitals
  - Neck - for distention and deviation
  - Chest - for quality of breath sounds
  - Abdomen - for tenderness, distention or rigidity
- **Check previously identified injuries**
- **Check interventions**
- **Record everything you see and do**



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# Assessment



## • Case Study Continued

- **Team confirms scene is safe, then enter to find patient lying on her back after fall from crib**
- **General impression good: child is pink and crying**
- **Initial Assessment:**
  - Manual stabilization of cervical spine
  - High-flow oxygen by nonrebreather mask
  - LOC, airway, breathing rate and quality, pulse rate, and quality of capillary refill all satisfactory
  - Mom assists by lifting her daughter's shirt to allow team to perform Initial Assessment

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# Assessment



## • Case Study Continued

- **Rapid Trauma Survey:**
  - Bruise to left side of head
  - Neck veins flat
  - Trachea in the midline
  - No external signs of injury to chest
  - Breath sounds present and equal
  - Heart sounds heard clearly; rate of 110 bpm
  - Abdomen not distended or tender
  - Pelvis stable
  - Bruising and tenderness over left thigh; other limbs appear uninjured
  - Pulse, motor and sensory functions satisfactory

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# Assessment



## • Case Study Decisions & Wrap-Up

- Left leg is splinted; patient placed on back board
- Medical direction notified of probable fractured left femur and possible closed head injury from falling from a height
- Patient and mother transported by ambulance to the hospital
- SAMPLE history, monitoring of vitals, ITLS Secondary Survey completed en route
- IV inserted and analgesia administered
- Team careful to explain all interventions to both mother and child

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# Assessment



## • Case Study Decisions & Wrap-Up

- Hospital assessments confirm diagnosis:
  - Closed left femoral shaft fracture
  - Closed head injury
  - Underlying skull fracture
- Patient discharged from hospital after several weeks of orthopedic, neurosurgical care
- Prehospital care more effective, less stressful to child – why?
  - Mother's presence and involvement
  - Team's communications techniques tailored to toddlers

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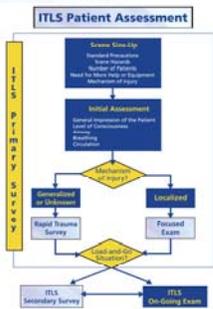
# Assessment



## • Points to Remember

- Stick with the basics:
  - SMR
  - ABCs
- Reassess frequently
- If the child's condition changes, repeat the Initial Assessment and Rapid Trauma Survey
- Rapid assessment, appropriate interventions, and transport to an appropriate facility are key

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# Questions?



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