

Consideration for Pediatric Consultation and Transfer

**Drafted by a work team of the Governor's EMS and Trauma
Advisory Council Pediatric Subcommittee**

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Consideration for Pediatric Consultation and Transfer

Introduction

Hospitals that are designated trauma centers must have transfer guidelines in place as part of the designation process. In response to the many requests for a template or guideline, the Pediatric Subcommittee of the Governor's EMS and Trauma Advisory Council drafted a compilation of guidelines that hospitals may utilize as their own transfer guidelines.

The transfer guidelines were developed in accordance with published standards (internet and print) across the nation at other trauma centers, a publication from the AAP (American Academy of Pediatrics) as well as published NHTSA (National Highway and Transportation Safety Administration) standards in regards to mode of transport. The transfer guidelines are meant to be inclusive of pediatric critical illness as well as pediatric trauma.

The following guidelines are not part of the Texas Department of State Health Services Safety and Administrative Code and are merely a template that facilities may adopt in order to fulfill requirements for trauma designation or simply to facilitate development of appropriate pediatric inter-facility transfer guidelines.

The Department of Health does not mandate Texas State designated trauma centers or non-trauma center hospitals to use these guidelines, but offers them to assist trauma centers and non-trauma centers in the development of their own guidelines. The Department recognizes the varying resources of different centers and that approaches that work for one hospital may not be suitable for others. The decision to use these guidelines in any particular situation always depends on the independent medical judgment of the medical provider.

Consideration for Pediatric Consultation and Transfer Trauma and Critical Illness

The transfer of pediatric patients with traumatic injuries as well as non-traumatic illness is addressed in the following document. The State of Texas has adopted four levels of trauma care in order to enhance the care of injured patients across the State. The acutely injured child who does not require critical care management can be cared for in a level 3 or level 4 Trauma Center. It is only the critically injured child and/or a child whose level of care needs exceed the local area capability that should be transferred to the most appropriate designated trauma facility with pediatric capabilities. It is accepted that some level 3 trauma patients may be admitted to an ICU for close observation; but if the patient begins to require ICU management, the patient should be transferred to the most appropriate designated trauma center with pediatric capabilities to care for a critically injured child. When a pediatric trauma center is not available, its role should be carried out by an adult trauma center that fulfills the requirement for provision of optimal trauma care to children.¹

In addition, pediatric patients with a non-traumatic illness can also be cared for in regional facilities. However, patients should be transferred to a higher level of care when their medical and/or nursing care exceeds what is available in their community.

Because the state of Texas is such a vast geographically challenging state and Trauma Services Areas are well defined with existing referral patterns, it is not the intent of this guideline to change those already established relationships. However, it is intended to encourage hospitals to align themselves with a facility that has the capacity to manage pediatric critical care and pediatric trauma. It is not intended to mandate transfer outside a region but to heighten the awareness of the need for Pediatric Critical Care and Trauma Services.

The following contains guidelines of when to transfer the critically injured and/or ill pediatric patient. The guidelines serve as a resource for hospitals in the State of Texas. The Texas Governor's EMS and Trauma Advisory Council recognizes a pediatric patient as one aged 14 years and under. It is noted that many pediatric patients in their early teens may be the size of a small adult which may prompt physicians and surgeons to keep them in their local facility. Much Caution is advised with this practice, as these patients still have emotional and physical needs akin to all children such as child life services as well as nurses and ancillary staff, trained to care for the pediatric patient.

¹ Resources for Optimal Care of the Injured Patient: 2014, American College of Surgeons Committee on Trauma., Chapter 10 page 66.

Consideration for Pediatric Trauma Transfer

Physiologic Criteria:

1. Depressed or deteriorating neurologic status (GCS ≤ 14) with focus on changes in the motor function
2. Respiratory distress or failure
3. Children requiring endotracheal intubation and/or ventilatory support
4. Shock, uncompensated or compensated
5. Injuries requiring any blood transfusion
6. Children requiring any one of the following:
 - a. Invasive monitoring (arterial and/or central venous pressure)
 - b. Intracranial pressure monitoring
 - c. Vasoactive medications

Anatomic Criteria:

1. Fractures and deep penetrating wounds to an extremity complicated by neurovascular or compartment injury
2. Fracture of two or more major long bones (such as femur, humerus)
3. Fracture of the axial skeleton
4. Spinal cord or column injuries
5. Traumatic amputation of an extremity with potential for replantation
6. Head injury when accompanied by any of the following:
 - a. Cerebrospinal fluid leaks
 - b. Open head injuries (excluding simple scalp injuries)
 - c. Depressed skull fractures
 - d. Sustained decreased level of consciousness (GCS ≤ 14)
 - e. Intracranial hemorrhage
7. Significant penetrating wounds to the head, neck, thorax, abdomen or pelvis including the groin
8. Pelvic fracture
9. Significant blunt injury to the chest, abdomen or neck (e.g. hanging or clothesline MOI's)

Other Criteria:

1. Suspicion for Child Maltreatment as evidenced by:
 - a. injuries sustained with no reported explanation
 - b. Injuries sustained that do not match the developmental capability of the patient
 - c. History of apparent life threatening event
 - d. Upper extremity fractures in a non-ambulatory child

Pediatric patient with burn injuries should be transferred to a Burn Center per the following burn criteria:

American Burn Association Transfer Criteria:

A burn center may treat adults, children, or both. Burn injuries that should be referred to a burn center include the following:

1. Partial-thickness burns of greater than 10 percent of the total body surface area.
2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints.
3. Third-degree burns in any age group.
4. Electrical burns, including lightning injury.
5. Chemical burns.
6. Inhalation injury.
7. Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality.
8. Burns and concomitant trauma (such as fractures) when the burn injury poses the greatest risk of morbidity or mortality. If the trauma poses the greater immediate risk, the patient's condition may be stabilized initially in a trauma center before transfer to a burn center.
9. Physician judgment will be necessary in such situations and should be in concert with the regional medical control plan and triage protocols.
10. Burn injury in patients who will require special social, emotional, or rehabilitative intervention.

Burns in children

Children with burns should be transferred to a burn center verified to treat children. In the absence of a regional pediatric burn center, an adult burn center may serve as a second option for the management of pediatric burns.

Other criteria for transfer:

1. Children requiring pediatric intensive care other than for close observation
2. Any child who may benefit from consultation with, or transfer to, a Pediatric Trauma Center or a Pediatric Intensive Care Unit.
3. Children with injuries suspicious of child maltreatment e.g. inflicted burn injury

Reference: *Resources for the Optimal Care of the Injured Patient: 2014*

Consideration for Pediatric Non-Trauma Transfer

Physiologic Criteria

1. Depressed or deteriorating neurologic status (GCS \leq 14).
2. Severe respiratory distress and/or respiratory failure
3. Children requiring endotracheal intubation and/or ventilatory support.
4. Serious cardiac rhythm disturbances,
5. Status post cardiopulmonary arrest.
6. Heart failure.
7. Shock responding inadequately to fluid resuscitation.
8. Children requiring any one of the following
 - a. Arterial pressure monitoring.
 - b. Central venous pressure or pulmonary artery monitoring.
 - c. Intracranial pressure monitoring.
 - d. Vasoactive medications.
 - e. Treatment for severe hypothermia or hyperthermia
 - f. Treatment for hepatic failure.
 - g. Treatment for renal failure, acute or chronic requiring immediate dialysis.

Other Criteria

1. Near drowning with any history of loss of consciousness, unstable vital signs or respiratory problems.
2. Status epilepticus.
3. Potentially dangerous envenomation. Use of a snakebite protocol is encouraged
4. Potentially life threatening ingestion of, or exposure to, a toxic substance.
5. Severe electrolyte imbalances.
6. Severe metabolic disturbances.
7. Severe dehydration.
8. Potentially life-threatening infections, including sepsis.
9. Children requiring intensive care other than for close observation.
10. Any child who may benefit from consultation with, or transfer to, a Pediatric Intensive Care Unit
11. Suspicion for child maltreatment. e.g. found "down" for no apparent reason
12. Any condition that exceeds the capability of the facility

Consideration for Interfacility Transport:

Transport Team and Method of Transport

Decision: The decision to transfer a patient is based on the previously listed anatomic and/or physiologic criteria in which the care of the patient is above and beyond the capability of the referring institution. Referring institutions need to have established policies and procedures in regards to the process of initiating the transfer (i.e. who talks to whom), gathering the required paperwork, as well as the process of informing the family and giving them maps to the receiving institution. The list of hospitals at the end of this document indicates the phone number(s) suggested by the referring institution to contact them for pediatric transfers.

Method: The method of interfacility transport is dependent on many variables. The state of Texas holds many geographic as well as weather challenges which will influence the referring provider's decision on moving a patient from one facility to the next. Transport by private vehicle is not encouraged with **critically** sick and/or injured children. Two areas to address in this determination of transport team as well as method of transport are patient related factors and general transport issues. Special consideration should be made for international transports. Intercept transports should be avoided.

Definition: For the purposes of this document, a pediatric transport team is considered a specialty care transport team. The Texas Administrative Code Title 25, Part I, Chapter 157 Subchapter B, Rule 157.11 defines a Specialty Care Transport as follows:

Specialty Care Transports. A Specialty Care Transport is defined as the interfacility transfer by a department licensed EMS provider of a critically ill or injured patient requiring specialized interventions, monitoring and/or staffing. To qualify to function as a Specialty Care Transport the following minimum criteria shall be met:

(1) Qualifying Interventions:

(A) patients with one or more of the following IV infusions: vasopressors; vasoactive compounds; antiarrhythmics; fibrinolytics; tocolytics; blood or blood products and/or any other parenteral pharmaceutical unique to the patient's special health care needs; and

(B) one or more of the following special monitors or procedures. mechanical ventilation; multiple monitors, cardiac balloon pump; external cardiac support (ventricular assist devices, etc.); any other specialized device, vehicle or procedure unique to the patient's health care needs.

(2) Equipment. All specialized equipment and supplies appropriate to the required interventions shall be available at the time of the transport.

(3) Minimum Required Staffing. One currently certified EMT-Basic and one currently certified or licensed paramedic with the additional training as defined in paragraph (4) of this subsection; or, a currently certified EMT-Basic and a currently certified or licensed paramedic accompanied by at least one of the following: a Registered Nurse with special knowledge of the patient's care needs; a certified Respiratory Therapist; a licensed physician; or, any licensed health care professional designated by the transferring physician.

(4) Additional Required Training for Certified/Licensed Paramedics: Evidence of successful completion of post-paramedic training and appropriate periodic skills verification in management

of patients on ventilators, 12 lead EKG and/or other critical care monitoring devices, drug infusion pumps, and cardiac and/or other critical care medications, or any other specialized procedures or devices determined at the discretion of the provider's medical director.

If available, a specialty transport team should be used to transport critically ill or injured children.

Equipment: Choosing the type of transport team (i.e. ALS, MICU, and/or specialty team) can be challenging given our state's rural nature as well as geographic obstacles. The following gives a synopsis of what type of patient can/should be transferred according to their level of care. At all times, the referring institution should be knowledgeable about the transport mode's pediatric capabilities, especially in regards to pediatric equipment on-board. If they do not have a specific item on-board (example: pediatric nebulizer) then the referring institution must ensure the patient leaves their facility with the needed piece of equipment.

Communication:

1. Both the referral (sending) and receiving (accepting) institution should have policies regarding hospital-to-hospital communication in regards to:

- Work-up required or not required prior to transport (i.e. CT scan),
- Helping the referral institution determine mode/method of transport (i.e. air vs ground) and
- Patient stabilization requirements for transport.
- Communication back to the receiving institution in regards to:
 - Patient arrival at the receiving institution with updated patient health status
 - Overall patient outcome
 - The ability to discuss any patient care specifics enabling both facilities to optimize patient care for future transfers.

Back-transfer:

The referring institution needs to be prepared for those patients requiring long-term or chronic care post injury/illness. Back-transfer is encouraged if the referring institution has the capability to care for the pediatric patient in the inpatient setting.

The method of transport:

The method of transport is dependent on the variables listed below. Air transport, either by fixed wing (airplane) or rotary wing (helicopter) is typically utilized when speed is critical, long distances are involved, and/or a specialty team is required and available for patient care. However, there are circumstances where taking an ALS unit out of a community, for example, renders the community without an advanced life support unit for a prolonged period of time. Therefore, in this situation, use of air medical transport may be required so as not to endanger the rest of the community.

The following guidelines will help the provider to determine which type of transport method to utilize when transferring a critically ill or injured child. This can also be divided into categories when assessing the method of transfer (ground vs air) as well as crew composition. (Per NHTSA April 2006 guidelines)

1. The availability of critical care and/or specialty care transport teams within a reasonable proximity.
2. The modes of transportation and/or transport personnel available as options in the particular geographic area.
3. Specific circumstances associated with the particular transport situation (e.g. inclement weather, major media event, etc.)

4. Anticipated response time of the most appropriate team and/or personnel.
5. Established state, local, and individual transfer service standards and/or requirements.
6. Combined level of expertise and specific duties/responsibilities of the individual transporting team members.
7. Degree of supervision required by and available to the transporting team members.
8. Complexity of the patient's condition.
9. Anticipated degree of progression of the patient's illness/injury prior to and during transport.
10. Technology and/or special equipment to be used during transport.
11. Scope-of-practice of the various team members

Transport Team Configuration: Patient factors

The referring facility needs to determine the risk for deterioration of the pediatric patient in order to determine the crew composition and ultimately, the method of transport. According to the National Highway Traffic Safety Administration (NHTSA) guidelines from April 2006, the following categories for risk are utilized. The desired team configuration is based on the NHTSA guidelines and adapted for pediatrics:

Stable with no risk for deterioration

Basic Life Support:

Oxygen, monitoring of vital signs, saline lock at the discretion of medical control

Stable with low/medium risk of deterioration

Advanced Life Support or MICU as defined by Texas Health and Safety Code rule 157.11 with consideration for use of Pediatric Transport Team based on the patient's underlying medical condition and reason for transfer:

Running IV, some IV medications including pain medications, pulse oximetry, increased need for assessment and interpretation skills, 3-lead EKG monitoring, basic cardiac medications, e.g., heparin or nitroglycerine

Stable with high risk of deterioration or Unstable

Use of Pediatric Transport Team highly encouraged when available in the following patient situations:

- advanced airway management required; secured airways, intubated, on ventilator
- multiple vasoactive medication drips,
- condition has been initially stabilized, but has likelihood of deterioration, based on assessment or knowledge of provider regarding specific illness/injury,
- cannot be stabilized at the transferring facility,
- condition deteriorating or likely to deteriorate, such as patients who require invasive monitoring, balloon pump,
- post-resuscitation, or who have sustained multiple trauma.

Strong consideration for air medical transport or critical care ground transport is recommended when pediatric transport team is unavailable

STATE OF TEXAS - CHILDRENS HOSPITALS

Children's Health Dallas

1935 Medical District Drive, Dallas, Texas 75235
hospital phone 214-730-KIDS (5437)
Transport phone 1-888-730-3627

Children's Health Plano

7601 Preston Rd.
Plano, TX 75024
Phone (469) 303-7000

Children's Hospital of San Antonio

333 North Santa Rosa Street
San Antonio, TX 78207
Transport 1.877.ALL.KIDZ (1.877.255.5439)

Cook Children's Medical Center

801 Seventh Ave.
Fort Worth, Texas 76104
Hospital phone 682-885-4000
Teddy Bear Transport 1-800-KID-HURT

Covenant Children's Hospital

4015 22nd Place
Lubbock, TX 79410
hospital phone 806.725.1011
NO pediatric transport team

Children's Health at University Health System

4502 Medical Dr.
San Antonio, TX 78229
210-358-KIDZ (5437)

Children's Memorial Hermann

6411 Fannin St.
Houston, TX 77030
Memorial Hermann Life Flight
713-704-4014

Dell Children's Medical Center of Central Texas

4900 Mueller Boulevard
Austin, Texas 78723
Hospital Phone (512) 324-0000
Transport 1-877-ILL CHILD

Driscoll Children's Hospital

3533 S. Alameda Street
Corpus Christi, Texas 78411
Hospital phone (361) 694-5000
(800) DCH-LOVE or (800) 324-5683
Transport (800) 879-KIDS (5437)

Edinburgh Childrens

1102 W. Trenton Rd.
Edinburg, TX 78539
956-388-6800

El Paso Children's Hospital

4845 Alameda Ave.
El Paso, TX 79905
Hospital phone: 915-298-5444
PICU Transport line_(915) 298-5431

McLane Children's Hospital Scott and White

1901 SW H K Dodgen Loop
Temple, TX 76502
Hospital phone (877) 724-5437
Transport line (254)-935-KIDS (5437)
Medical City Children's Hospital (HCA)7777 Forest Ln. Dallas, TX 75230
972-566-7000
Transport hotline 800-SICK-KID (800-742-5543)

Methodist Children's Hospital

7700 Floyd Curl Dr
San Antonio, TX 78229
Specialty Team Transport
877-575-2368

St. David's Children's Hospital

12221 N. Mopac Expressway
Austin, TX 78758
888-989-8985

Texas Children's Hospital

6621 Fannin Street
Houston, Texas 77030
Hospital phone 832-824-1000
Kangaroo Crew Transport:
832-824-5550 in Houston
877-770-5550 (toll-free) outside Houston area

The Woman's Hospital of Texas Pediatric Center
7600 Fannin
Houston, TX 77054
AIR CARE Pediatric Transport Team 1-877-777-4221

UTMB Children's Hospital at John Sealy Hospital
301 University Blvd.
Galveston, TX 77550
409 747-2170.

Trauma Center Designated Children's Hospitals of Texas by Trauma Service Area

Level I

1. Children's Health Dallas – Level I Trauma Designation

1935 Medical District Dr.
Dallas, TX 75235

TSA E

2. Children's Health at University Health System – Level I Trauma and Pediatric Burn Center

4502 Medical Dr.
San Antonio, TX 78229

TSA P

3. Children's Memorial Hermann – Level I

6411 Fannin St.
Houston, TX 77030

TSA Q

4. Dell Children's Medical Center – Level I

4900 Mueller Blvd.
Austin, TX 78723

TSA O

5. Texas Children's Hospital – Level I

6621 Fannin St.
Houston, TX 77030

TSA Q

Level II

1. Cook Children's Medical Center – Level II

801 Seventh Ave.
Fort Worth, TX 76104

TSA E

2. Covenant Children's Hospital – Level II

4015 22nd Place
Lubbock, TX 79410

TSA B

3. McLane Children's Hospital Scott & White – Level II

1902 SW H.K. Dodgen Loop
Temple, TX 76504

TSA L

Level III

1. Children's Hospital of San Antonio – Level III

333 Santa Rosa St.
San Antonio, TX 78207

TSA P

2. Driscoll Children's Hospital – Level III

3533 S. Alameda St.
Corpus Christi, TX 78411

TSA U

Children's Hospital within a trauma designated Adult Hospital

1. UTMB Children's Hospital – Located within an Adult Level I facility

301 University Blvd.
Galveston, TX 77550

TSA R

2. Methodist Children's Hospital – Attached to Level III adult facility

7700 Floyd Curl Dr.
San Antonio, TX 78229

TSA P

3. Edinburg Children's Hospital – Attached to Level IV adult facility

1102 W. Trenton Rd.
Edinburg, TX 78539

TSA V

Non-Trauma designated Children's Hospitals by Trauma Service Area

1. Children's Health Plano

7601 Preston Rd.
Plano, TX 75024

(469) 303-7000

TSA E

2. Cook Children's Northeast Hospital

6316 Precinct Line Road
Hurst, TX 76054

(817) 605-2500

TSA E

3. St. David's Children's Hospital

12221 N. Mopac_Expressway
Austin, TX 78758
888-989-8985

TSA-O

4. El Paso Children's Hospital

4845 Alameda Ave.
El Paso, TX 79905

TSA I

5. Medical City Children's Hospital

7777 Forest Ln.
Dallas, TX 75230
972-566-7000
Transport hotline 800-SICK-KID (800-742-5543)

TSA E

6. Providence Children's Hospital

2001 N. Oregon St.
El Paso, TX 79902

TSA I

7. Texas Children's Hospital West Campus

18200 Katy Fwy.
Houston, TX 77094

TSA Q

Pediatric Specialty Centers

1. Children's Child Guidance Center (Mental Health Services)

8535 Tom Slick
San Antonio, TX 78229

TSA P

2. Healthbridge Children's Hospital (Rehab)

2929 Woodland Park Dr.
Houston, TX 77082

TSA Q

3. Shriners' Hospital for Children, Galveston (Burns)

815 Market St.
Galveston, TX 77550

TSA R

4. **Shriner's Hospital for Children, Houston** (Orthopedic)

6977 Main St.

Houston, TX 77030

TSA Q

5. **Texas Scottish Rite Hospital for Children** (Orthopedic, Neurological, and Dyslexia)

2222 Welborn St.

Dallas, TX 75219

TSA E