



**North
Shore LIJ**

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Pediatric and Neonatal Transfer Guidelines

I. Introduction

Pediatric patients are not little adults with merely a difference in size and body weight. Their unique physiology, cognitive and developmental growth require a specialized approach and healing environment. All children need children's hospitals. Interfacility transports improve access to pediatric care. The aim of such transfers is the timely and safe transport of patients, early initiation of specialized pediatric care and integration of care amongst different providers.

These guidelines serve as a framework with which pediatric, neonatal and trauma referrals are to be processed at Cohen Children's Medical Center of New York (CCMC). They were developed in consultation with published literature and tailored to address local factors. The determination of level of response (speed of team activation and departure), team composition and mode of transfer are included. These guidelines are not meant to replace clinical decision making by credentialed providers.

II. Communications

All referrals for interfacility transfer of pediatric patients, age ≤ 21 years, are received through one recorded line with conferencing capability. A transport nurse (RN) is assigned to be the dedicated communications specialist. He or she will facilitate the intake of information, communication between the referring physician, medical control physician, other subspecialty providers, and EMS. A standardized intake form will be completed and recommendations and disposition will be documented. The transport RN will also provide the referring physician with updates when appropriate.

III. Medical Control Physician

A. Responsibilities

- 1) Obtain information to assess patient's acuity, suitability and stability for transfer.
- 2) Engage other subspecialty physicians for consultation when required
- 2) Verification of acceptance and disposition of the patient.
- 3) Decide on required urgency of response, team composition, mode of transfer and receiving hospital unit
- 4) Provide referring physician with recommendations for diagnostic and therapeutic intervention when necessary
- 5) Provide transport team with medical oversight during transport



B. Personnel

Referrals for pediatric transfers will be directed to the pediatric critical care physician or their designee. Referrals for neonatal transfers will be directed to the neonatal critical care physician or their designee.

Trauma referrals will be directed to the Pediatric ED Attending and the following individuals:
Pediatric Neurosurgery Attending or their designee for isolated neurotrauma
Pediatric Orthopedic Attending or their designee for isolated skeletal injury
Pediatric Surgery Attending or their designee for multi-system trauma and all other trauma referrals

The Pediatric Critical Care Physician may assist in the determination of acuity of transfer and transport team composition for trauma transfer referrals.

IV. Determination of Transport Category based on Patient Acuity

All referrals for interfacility transfer will be evaluated for patient acuity, physiologic stability, and need for urgent, time sensitive diagnostic or therapeutic intervention. Category will be determined by the medical control physician.

A. Emergent Transfers

Patients are unstable or have a high likelihood of deterioration. Patients require monitoring and initiation or titration of hemodynamic and/or advanced respiratory support. Patients that require time sensitive diagnostic or therapeutic intervention not available at the referring facility, regardless of their compensated physiologic status also require to be emergently transferred.

A specialized transport team capable of delivering pediatric or neonatal advanced life support will respond with a maximum departure time of 30 minutes.

B. Urgent Transfers

Patients demonstrate cardiovascular, respiratory and neurologic systems stability with current level of therapy. They do not require frequent re-assessment and titration of therapy. Transfer is indicated for continued care and/or lack of general pediatric or subspecialty services. The referring provider and facility are capable and comfortable with providing current level of care.

A transport team capable of ongoing assessment and intervention for changes in patient status will respond with a maximum departure time of 60 minutes.



C. Scheduled Transfers

Patients are admitted to an inpatient unit and have a very low likelihood for destabilization or requiring a higher level of care. They do not require cardiovascular or respiratory support.

Transfer request may be due to:

- a) parental request
- b) need for subspecialty expertise
- c) need for diagnostic exam or therapy not available at referring hospital.

Transport will be scheduled in consultation with the referring provider.

V. Transport Team Configuration

The Medical Control physician will determine the transport team configuration based on patient acuity, physiologic status, and type of intervention required. Current patient needs and anticipated needs will dictate team configuration with each team member's skill set and scope of practice in mind. Commonly used team configurations used by the CCMC Transport Program are outlined below.

- 1) EMS
- 2) EMS with Critical Care Medic
- 3) EMS and Pediatric Transport RN
- 4) EMS, CCMC Transport RN, Respiratory Therapy
- 5) EMS, CCMC Transport RN, Respiratory Therapy, Advanced Critical Care Provider (attending, fellow, nurse practitioner)
- 6) EMS, CCMC Transport RN, Advanced Critical Care Provider (attending, fellow or nurse practitioner)

VI. Mode of Transport

CCMC Transport program is capable of providing ground or rotor wing interfacility transport. The medical control physician in consultation with the referring physician will determine the mode of transport. Several factors are taken into consideration in its determination. They are the following:

- a) Patient specific factors
 - i) Acuity, degree of instability or potential for deterioration
 - ii) Condition requires a time sensitive diagnostic and/or therapeutic intervention
 - iii) Type of intervention and equipment required during transport
- b) Environment
 - i) Distance of referring hospital to CCMC
 - ii) Anticipated travel time (to referring hospital and/or total travel time to and from



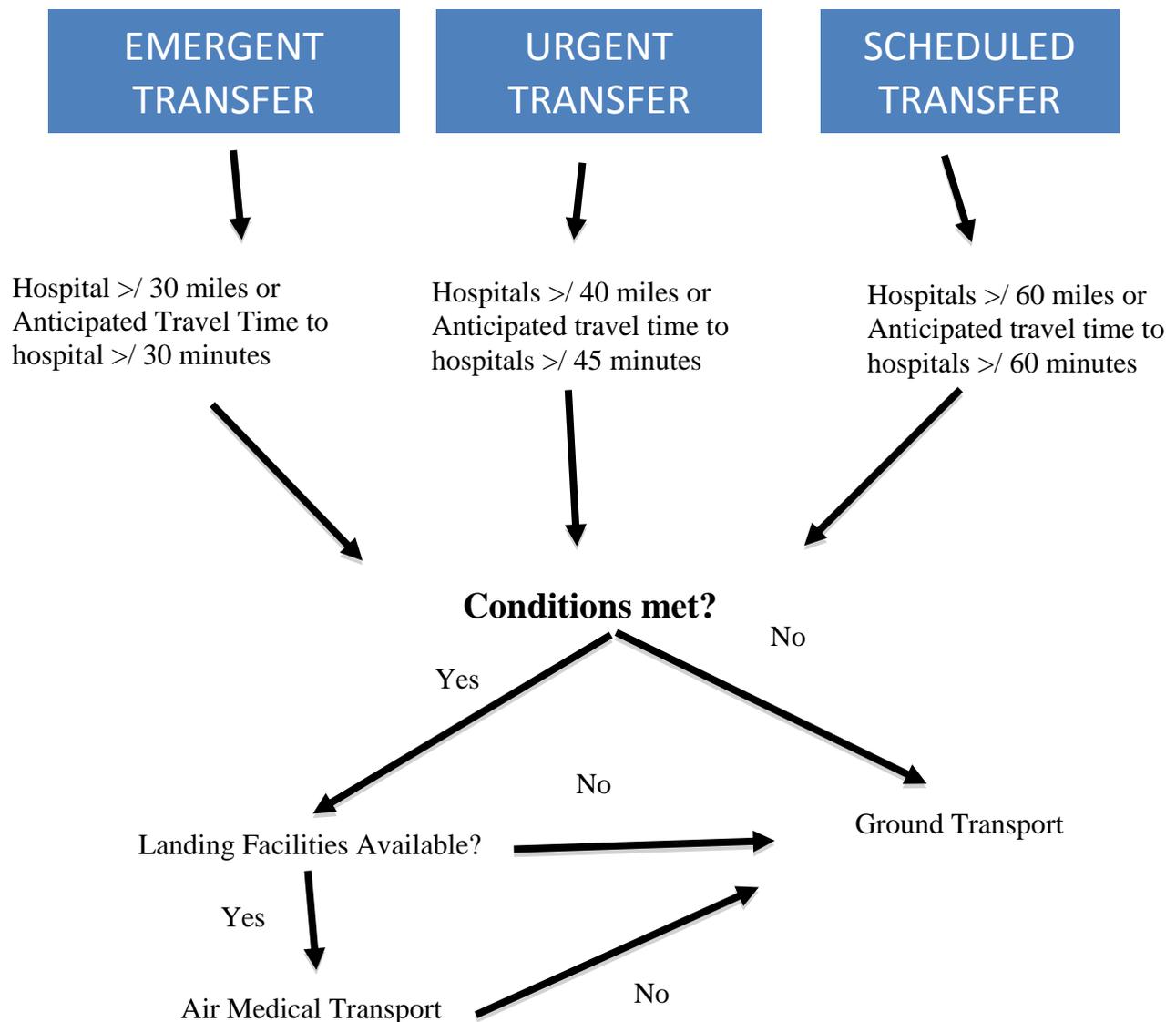
referring facility)

- iii) Availability of landing facilities for air medical transport
- iv) Weather

c) Transport Team Considerations

- i) Prolonged total travel time may leave the program without adequate medical services coverage for other transfer requests

Based on patient acuity/transport category, travel distance and times the mode of transport will be determined as follows:





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VII. Pediatric Trauma Transfers

Transfer of critical trauma patients to regional trauma centers result in improved outcomes. CCMC Pediatric Trauma Program is the largest in New York State. The development, ongoing review and revision of transfer guidelines are part of the designation process.

Patients whose mechanism of disease is a traumatic process are triaged for acuity utilizing CCMC trauma tiers. These were developed using published standards on trauma triage and transfers. They include physiologic, anatomic and mechanism of injury criteria. Response time will be similar for non-trauma transfers with corresponding acuity and transport category. Transport team composition and mode of transport will be determined using guidelines for general pediatric interfacility transports. Transfers will be coordinated in consultation with the Trauma Surgeons (General Pediatrics, Neurosurgery, Orthopedics) and other surgical subspecialties such as Pediatric ENT, Vascular Surgery, Ophthalmology, and Maxillofacial Surgery as dictated by patient status and extent of injuries.



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Trauma Transfer Categories and Determining Criteria

EMERGENT TRANSFERS

Physiologic Criteria	Mechanism of Injury	Anatomic Criteria
>Initial GCS <8	> Penetrating injury to the head, neck, chest or abdomen	> Spinal Cord Injury
>Initial GCS <13 with deterioration >/ 2 points	>Blunt thoracic and/or abdominal trauma with evidence of cardiorespiratory instability	>Head injury accompanied by any of the following: > CSF Leak >Depressed skull fractures >Open head injuries excluding simple scalp lacerations >Intracranial hemorrhage >Evidence of mass effect >Requiring emergent craniotomy at referring hospital.
>Age specific hypotension SBP </ 70mmHg + 2(age in yrs)	>Blast or explosive injury	> Limb amputation with potential for reimplantation
>Shock requiring fluid boluses or initiation of vasoactive support	>Fall >10 feet or 2x height of child	>Flail chest
>Ongoing transfusion of blood products	>Ejection from a motor vehicle	>Extremity injury with evidence of neurovascular compromise
>Intubation and mechanical ventilation	>Auto-pedestrian or Auto-bicycle with significant impact; speed > 20 miles/hour	Severe maxillofacial trauma



Urgent Transfer Criteria

Physiologic

- Isolated head injury with GCS 13-15, stable and unchanging, with any of the following:
 - non-depressed skull fracture
 - small subdural hemorrhage without mass effect

Mechanism of Injury

- Blunt abdominal trauma with stable hemodynamics

Anatomic Criteria

- Stable Pelvic Fracture
- Isolated orthopedic trauma (limb) without neurovascular compromise

Scheduled Transfer Criteria

> Trauma patients admitted to an inpatient facility for more than 24 hours, with a stable physiology. They do not require cardiorespiratory support or a time sensitive diagnostic or therapeutic intervention. Transfer is for pediatric subspecialty care.



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VIII. Neonatal Transfers

Neonatal Transfers (Additional Considerations)

- a) See table
- b) General considerations:
 - i) Infant requiring mechanical ventilation (nCPAP, Conventional, noninvasive)
 - ii) $FiO_2 \geq 60\%$
 - iii) Air Leak Syndromes... see table
 - iv) Premature infant whose gestational age is ≤ 32 weeks from a level II Neonatal ICU
 - (1) Includes thermal instability
 - v) Body Weight < 1500 grams with cardiopulmonary challenges
 - vi) Ground transport time would likely exceed 30 minutes
 - vii) Advanced CPR – recent or ongoing
 - viii) Shock...see table
 - (1) Includes vasopressor drips or recurrent volume therapies
 - ix) Seizure activity, congestive heart failure, systemic inflammatory response syndrome, or disseminated intravascular coagulation.
 - x) Surgical emergencies...see table.



TABLE: Neonatal specific considerations (in conjunction with Patient Acuity and Mode of General Transport Guidelines)

Disease Category:	Emergent: Helicopter	Emergent: Ground	Urgent: Helicopter	Urgent: Ground
Respiratory Failure. (e.g. airspace disease, pulmonary vascular disease, air leak syndromes, congenital anomalies, etc)	Rapid rate of deterioration ¹ on advancing levels of mechanical support or likely to need advanced support (e.g. HFV, iNO, advanced PPHN tx or ECMO), not available at sending institution	Stable on current therapy and course ¹ . Could tolerate a 30-60 minute delay in definitive care	Needs a short time on the return limb	Team and equipment composition enough to ensure stability ¹
Shock (Distributive, Cardiogenic, Hypovolemic)	Extremely affected, &/or rapid rate of deterioration on escalating therapy that needs: (1) our team augmenting the sending hospital, or (2) receiving hospital has unique resources ¹	Severely affected, but stabilizing on current therapy that would likely tolerate the delay in definitive care ¹	Needs a short time on the return limb	Team and equipment composition enough to ensure stability
Cardiac Failure (e.g. cyanotic congenital heart disease, myocardial challenges, aorta anomalies, AVM's, anemia, etc)	Suspected Congenital Heart Disease that likely needs definitive interventional therapy ² . (e.g. TGA with intact septum, critical coarctation, especially late onset/discovery, PGE-1 dependent)	Stable course on current support	Needs a short time on the return limb	Team and equipment composition enough to ensure stability ¹
Surgical Emergency (e.g. Necrotizing enterocolitis, abdominal wall defect, Congenital diaphragmatic hernia, intestinal volvulus, meningomyelocele, bladder extrophy, airway compromised by mass or abnormal anatomy, severe ROP)	Immediate surgical evaluation and potential surgery likely needed to prevent severe morbidity or mortality ³ .	Stable on current therapy and course ¹ . Could tolerate a 30-60 minute transport	Needs a short time on the return limb	Team and equipment composition enough to ensure stability ¹
CNS emergency (e.g. Hypoxic Ischemic Encephalopathy likely needing brain cooling. Unstable seizures needing advanced care)	Immediate treatment required to prevent severe morbidity or mortality	Stable on current therapy and course ¹ . Could tolerate a 30-60 minute transport	Needs a short time on the return limb	Team and equipment composition enough to ensure stability ¹
Multisystem Emergency e. g. extreme prematurity, metabolic crises, DIC, systemic inflammatory response syndrome, VACTERL, usually in conjunction with some of above categories¹	Rapid rate of deterioration ¹ on advancing levels of medical support or likely to need advanced support not available at sending institution	Stable on current therapy and course ¹ . Could tolerate a 30-60 minute transport	Needs a short time on the return limb	Team and equipment composition enough to ensure stability ¹

¹based on initial presentation and serial vital signs, testing & images, interpreted by sending and/or receiving providers. If ECMO candidate, consultation with ECMO team recommended in parallel with transport

²consultation with cardiology recommended in parallel with transport

³consultation with surgical specialty recommended in parallel with transport