Bradford Teaching Hospitals
NHS Foundation Trust

Title: The Stabilisation and Transfer of Children

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Purpose

This document is designed to provide information and support to clinical teams involved in the management of the unwell child at Bradford Teaching Hospitals NHS Foundation Trust. It focuses on the initial stabilisation and transfer of this patient population.

Acknowledgements

The information within this document is based on local policies as well as reproducing and adapting published guidance from the Leeds PICU team, the regional paediatric transport service, Embrace and Norfolk and Norwich University Hospitals Intra-Hospital Transfer guideline.

Introduction

Children with significant illness can present a unique clinical challenge. In particular, children with deteriorating illness and requiring increasing levels of care, to what would be considered level 2 or 3 critical care are outside the normal bounds of current day-to-day provision at BTHFT. As such, it is recognised that staff managing these patients do so by drawing on a wealth of previous experience and expertise in conjunction with other healthcare professionals both locally and with advice from sources outside BTHFT.

From time to time it will be necessary to manage these patients, who either present in this condition or who deteriorate whilst in the Trust. This will often necessitate the transfer within the Trust to a place of safety to allow a period of treatment and stabilisation prior to further investigation and or transfer for definitive care. As BTHFT is not designated a centre for the provision of Level 2 or 3 critical care this will commonly require the transfer of these children to a regional paediatric critical care centre. Generally, the transfer of these patients will be undertaken by our regional, infant and children's transport service, Embrace. However, there will be occasions where this will not be possible, either due to Embraces service being unavailable due to demand or the patient's condition requires an emergent transfer for time critical therapy.

Scope

This document is intended to aid in the processes of stabilisation and transfer of children. It is not intended to provide specific clinical management advice but will signpost to sources of valuable information in this regard. The clinical teams caring for this patient population at BTHFT are those with the responsibility for determining the best on-going management and this may include deviating from advice provided by these sources if this is appropriately justified.

This document does not relate to children under the care of the neonatal unit and neonatal critical care teams.

Due consideration will also need to be given to policies regarding 'Management of Surge and Escalation. Procedure for Children Requiring Intensive Care in the Absence of Paediatric Intensive Care Beds or Delay in Arrival of the Transport Team'.

Management of Critically Unwell Children

The clinical management of the unwell child will be led by the parent team in conjunction with input from local specialists as required and adult critical care clinicians at BTHFT. If there are concerns regarding the severity of a child's illness there is a recognised referral pathway via the regional infant and children's transport service, Embrace, who can coordinate telephone advice from additional paediatric specialists, including paediatric intensive care teams.

Embrace (Yorkshire & Humber Infant & Children's Transport Service) 0845 147 247 2 General enquiries 0114 305 3005
Leeds PICU 0113 3927447 LGI switchboard 0113 2432799
Sheffield PICU 0114 2717119 Sheffield Chidren's Hospital Switchboard 0114 2717000

PICU Consultants in Leeds or Sheffield are available at any time for advice or informal discussions and can be reached either via Embrace or by ringing the unit directly. If informal advice only is required, this can be made clear at the outset.

Management advice for many conditions and processes for accessing additional advice, support and pathways for transfer can be found within The Yorkshire and Humber Paediatric Critical Care Operational Delivery Network Guidelines Document which can be found at the following link. This link also provides access to the Yorkshire and Humber Paediatric Major Trauma Guidelines. It is recommended that clinicians are aware of the content of these documents for reference in future circumstances.

https://www.networks.nhs.uk/nhs-networks/yorkshire-humber-paediatric-critical-care-odn/guidelines

Process to be followed for the stabilisation of children awaiting transfer to Paediatric Critical Care

The following process will be followed for all children requiring stabilisation and transfer by the Embrace transport team.

This will apply to children who deteriorate within a children's clinical area (High Dependency Room/Children's Admission Unit/Wards 30/32). Following deterioration in the condition of any child who requires stabilisation, the child is transferred to the stabilisation room located on ward 30/32. The situation for children presenting to A&E is similar, but the child will stay in the resuscitation bay and the nursing staff will be supplied by A&E. A senior A&E doctor will also be involved.

Staffing

A rota for nursing staff is established which identifies those staff who have undergone additional education and training in the care and management of the acutely ill child. Every shift has an identified staff member who has undertaken this training and this nurse must be called upon to support the child in the stabilisation room.

The paediatric registrar or consultant located within the paediatric ward will be in attendance. The paediatrician will contact the on-call anaesthetic registrar (or consultant intensivist) for support and assessment of the child.

The anaesthetic registrar will attend the clinical area/stabilisation room and will assess the child jointly with the paediatrician (following which a call will be made to Embrace). The anaesthetic registrar will call the consultant intensivist to discuss the case and decide which other personnel are required to attend. The consultant anaesthetist on call for acutes may be requested to attend to permit the registrar to stay with the child until Embrace have taken over care. If intubation and ventilation is required, the attendance of an ODP will be requested. Either the anaesthetic registrar or consultant intensivist will be responsible for the management of the child's airway and ventilation and will stay with the child until handover to the Embrace team has occurred.

For children weighing <3.5kg the attendance of the neonatology consultant may be requested to assist with stabilisation (NICU workload permitting). Once the child is stable, the neonatologist can leave and either the anaesthetic registrar or consultant intensivist will remain until the child has been handed over to Embrace. For small children, either the paediatric consultant or registrar will also be in attendance until the arrival of Embrace. This is in recognition of their relatively greater skill and experience for this challenging age group. It should also be recognised that, especially for children <3.5kg, many of the staff are practising outside their normal scope of work and the standards expected are in accordance with this.

The stabilisation staffing team will therefore consist of:

- paediatric consultant and registrar
- children's nurse (additionally trained in the management of the acutely ill child)
- anaesthetist registrar
- consultant intensivist
- second consultant intensivist or consultant anaesthetist may be requested
- neonatology consultant (if required for children <3.5kg or neonatology registrar if sufficiently experienced)

- ODP

In the event that two children require stabilisation then the same process will be followed. The second child will be managed within the Stabilisation Unit. A decision will be made by the consultant intensivist as to who is the best person to manage the child. An additional children's nurse (also trained in the management of the acutely ill child)/neonatal nurse will be present throughout to care for the child. An assessment will be made if a second anaesthetist is required to remain throughout to care for the child.

Equipment
Equipment will be checked daily by the nominated stabilisation nurse and between cases and a record of checks will be made (using the standardised equipment checklist- this will be uploaded monthly to the share stabilisation drive by the clinical educator).

The ventilator will be checked, and the circuit set up by the critical care team who arrive to intubate the child.

The resuscitaire will be checked daily by the nominated stabilisation nurse using a separate checklist and a record of these checks uploaded to the shared stabilisation drive.

The room will be appropriately secured to ensure there can be no contamination, stock depletion or equipment tampering.

The nurse trained in stabilisation will be responsible for initiating equipment checks and will ensure that nursing staff within the paediatric service are trained and undertake appropriate competency assessments for the checking of emergency resuscitation equipment.

As a quality assurance measure, the Clinical Engineering Department will undertake a regular equipment assessment, which will be included in the monitoring process.

Airway Management and Intubation

Where there is doubt about an on-going deterioration in a child's condition or where advanced airway assessment and management is required, it may become necessary to involve clinicians with appropriate airway skills. This will usually be the anaesthetic/intensive care team. Details regarding the escalation to the intensive care team at BTHFT can be seen in the previous section. Any patient who requires invasive ventilation is considered Level 3 and should be managed as such including maintaining appropriate levels of monitoring and staffing, until care is handed over to equally appropriate staff such as a departing Embrace team or team at a receiving hospital/ward. Appropriate monitoring for these patients includes as a minimum;

- ECG
- Pulse oximeter
- Blood pressure (NIBP as a minimum, ABP may be indicated)
- EtCO2
- Temperature

- Additional monitoring as clinically indicated.

When planning to undertake endotracheal intubation it is recommended that a pre-intubation checklist is carried out to minimise risk and this can be seen and printed in Apendix 1 (adapted from Leeds PICU checklist) a further Embrace pre-intubation checklist with post intubation checks and documentation is in Appendix 2. This should be used for patients being transferred to other centres and a copy kept in BTHFT records for scanning.

The following chart provides some useful information for stabilisation teams, as to what equipment and sizes the intensive care team may require for airway management. (adapted from Leeds PICU document)

Age:

Estimated Weight:

Face Masks	
Neonate	00/01
Infant	02
Small child	03
Large child	04

Oropharyngeal Airway Sizing
Centre of the incisors to angle of the mandible. Concave side up.

Laryngoscope	
<1 year	Straight blade (Miller/ Robertshaw) Curved blade (MAC 1 or 2)
>1 year	Curved blade (Macintosh 2 or 3)

Endotracheal Tube (uncuffed up to 8 years) / LMA Size

Age	Weight	ETT size	At lip (cm)	At nose (cm)	Suction (FG)	LMA Size (inflation vol)
Newborn	3.0	3.0 – 3.5	9.5	11.5	7 – 8	1 (4ml)
3month	5.5	3.5	10	12	8	1 / 1.5 (4-7ml)
1 year	10	4.0	11	14	8	1.5 (7ml)
2 year	12	4.5	12	15	8	2 (10ml)
3 year	14	4.5	13	16	8	2 (10ml)
4 year	16	5.0	14	17	10	2 (10ml)
6 year	25	5.5	15	19	10	2.5 (14ml)
8 year	31	6.0	16	20	10	3 (30ml)
10 year	37	6.5	17	21	12	3 (30ml)
12 year	43	7.0	18	22	12	4 (40ml)
14 year	50	7.5	19	23	12	4 (40ml)
16 year	60	8.0	20	24	12	4 (40ml)

Check Location of Sugammadex and consider having nearby and drawn up if necessary.

Consider difficult airway equipment and check availabilty

Emergency Drugs		
Adrenaline (1 in 10 000)	10mcg/kg 0.1ml /kg	
Atropine	20mcg/kg	
Lorazepam	0.1mg/kg	
Phenylephrine	1-10mcg/kg	
Ephedrine	0.25-1mg/kg	

Additional useful information can be found in the Embrace drug/equipment chart at the following link

https://www.sheffieldchildrens.nhs.uk/download/456/embrace-operational-guidelines/4708/drug-chart-under-review.pdf

Transfers

It is essential to ensure that critically unwell children are treated in an expedited manner at an acute hospital, such as provided by BTHFT, to stabilise their condition and limit further deterioration/injury. However, there are scenarios where following this initial

treatment, it may become necessary for secondary transfer to another area or another acute hospital. This may be necessary in the following instances;

- Clinical transfer- to provide ongoing care within the BTFHT or when facilities needed for definitive care are not available within BTHFT.
- Capacity Transfer- when BTHFT has inadequate bed capacity, staffing or monitoring to provide necessary care.
- Repatriation- Patients will usually have undergone their specialist treatment and are usually stable and moving closer to home. Most commonly repatriations in BTHFT are following discharge from PICU and involve the patient returning to us.

The most important consideration when transporting patients anywhere is maintaining safety. The transfer of any critically ill or injured patient requires the preparation, equipment and thought processes to be the same irrespective of whether they are being transferred a short intra-hospital distance or a much further inter-hospital distance as the hazards presented are the same.

Transferring Paediatric Patients within BTFHT (Intra-hospital Transfer)

Transfer of patients has the potential to expose them and transferring staff to additional risk and may pose additional worry for carers and relatives (The Association of Anaesthetists of Great Britain and Ireland (AAGBI), 2009). The AAGBI (2009) also mention that there is little guidance on intra-hospital transfer but that the risks are similar to those posed on inter-hospital transfer.

Transfers require a collaborative, inter-professional approach to patient care and this relies on good communication between members of staff. It is essential that a systematic approach is taken to the process of patient transfer; starting with the decision to transfer, through the pre-transfer stabilisation, and then the management of the transfer itself.

Where escorts are referred to, this means escorts by appropriate nursing, allied health professional staff or medical escorts. It may be deemed appropriate for the child/young person to be escorted by the parent/carer alone, with an HCA or Student Nurse; however, this will need to be appropriately decided upon by the nurse responsible for the patient. It may not be deemed safe for a member of staff to leave their department, e.g. out of hours when staff numbers are reduced, so it may be appropriate to request further team members to assist from elsewhere.

This section is applicable to the patients who are aged 0-16 years who require transfer to other ward areas, ED, radiology or theatres, or those requiring transfer from ED to other departments within the hospital.

Intra-Hospital Transfer of Non-Critically Unwell Children

It is the duty of the Registered Nurse caring for each child/young person to assess their physical and mental condition prior to any transfer within the hospital premises and to determine the need for an escort. Patients may require review by a senior doctor prior to transfer and assessment regarding the safety of transfer.

Where possible the patient must be stabilised prior to transfer and stability recorded. Those patients requiring transfer prior to stabilisation will be deemed as high risk and relevant trained escort/s provided.

Where possible, departments must liaise with each other on approximate times for transfer of patients to ensure timely release from the ward and identification of an escort if required. Communication between departments must be adequate to ensure the receiving department is aware of the patients' condition. This should include a full hand over as per BTHFT policy.

Consideration should be given to whether it is safe to transfer a patient with the parent/carer, taking into consideration whether there are any safeguarding concerns, or the parent has/is suspected of having unmanaged drug/alcohol abuse concerns.

Any baby/young child being transferred should not be carried in arms whilst walking, and should be transferred appropriately in a cot, bassinette, securely fastened in a car seat, or sitting securely on a carer's lap whilst being pushed in a wheelchair

Patient Escorts

The competency of the member of staff required to act as an escort must be equal with the needs of the patient, this will in part be determined by considering the risk of transfer, the patient's current clinical condition and stability and whether any additional risk factors are present. Some of these risk factors are listed below (this list is not exhaustive)

- Patient requiring high frequency observations (≥ 1 hourly)
- Patient requiring oxygen or ventilatory support
- Drug infusions or blood transfusions running
- Agitated, confused or significant behavioural concerns
- Presence or suspicion of unstable spinal fracture or cord injury
- Tracheostomy
- Chest drains
- Seizures this admission
- Safe guarding concerns
- radiological skeletal survey required
- Has had or will have sedation whilst away from ward
- Patient from theatre and/or having undergone anaesthesia

The presence of one or more of these risk factors will often result in needing a trained nurse escort as a minimum to facilitate safe transfer.

The escort must be familiar with the care required by the patient and any supporting equipment e.g. pumps, tracheostomy safety equipment, thus able to initiate basic management of potential hazards. An HCA/Student Nurse could be considered as an escort if the patient does not require oxygen, have IV fluids or medications infusing and is considered an appropriate escort by the RN responsible for the patient.

If patients are considered to be low risk, then they may be safe for transfer with their parents/carers depending upon the patient condition and the time that the transfer takes

place. The parents/carers should be aware of the nature and purpose of the transfer and the child or young person informed if appropriate.

Every escort must be aware of what action to take should the condition of the patient deteriorate during transfer including emergency telephone numbers. Before the patient is transferred the RN must ensure that the patient's comfort, privacy and dignity can be maintained. The Registered Nurse must ensure an adequate patient handover is given, either via telephone if it is deemed safe to transfer the patient without an escort or with the parent/carer, HCA or Student Nurse, or face to face with the Registered Nurse taking over the patient care.

It is the duty of the Registered Nurse to consider the risk of all transfers and to consider:

- The nature of the patient's medications, any monitoring required, and the safe transfer of patient medication.
- The likely duration of the transfer and any procedure being undertaken e.g. MRI under sedation.
- Equipment which must be transferred with the patient e.g. IV fluids, catheter bags, wound drains, monitors should be attached to the bedside/wheelchair where possible and batteries need to be fully charged.
- All central lines/cannulas and other lines which must be securely fastened prior to transfer.
- Ensure that sufficient fluid remains to last the duration of the planned transfer/procedure where IV fluids or other infusions are in progress.
- Be aware that it is the responsibility of the Registered Nurse to connect and disconnect any equipment e.g. where a patient is transferred on oxygen.
- Be aware that it is the responsibility of the Registered Nurse to ensure all documentation required is transferred with the patient e.g. patient's health records (secure in an envelope if transferred with parents/carers only).
- The time the transfer takes place, e.g. out of hour's periods, radiology will have reduced staffing levels and the child or young person and families will need to be escorted.
- Ensure that all transfers adhere to the Trust infection control policy and advice sought from the infection control team if guidance required.

Out of hours

The on-call paediatric registrar is available to help determine whether the patient is medically stable for transfer. Out of hours, even if the patient is assessed as being low risk and suitable for transfer without an escort, an escort should be provided.

Intra-Hospital Transfer of Critically Unwell Children

Critically unwell children present additional concerns for transferring around BTHFT and additional preparation, resources and staffing may be required to ensure a safe transfer takes place. All children deemed to be requiring level 2 or 3 critical care support will need senior medical input prior to transfer. In addition all Level 3 patients will require the support of the intensive care team for the stabilisation and transfer of this challenging patient population.

As stated earlier, transferring a critically unwell child within the hospital should be considered the same as taking the patient on a longer transfer outside of the Trust. As such monitoring, staff, immediate availability of drugs and essential equipment contained within the paediatric emergency transfer bag should all be of the same level as that which is taken on inter-hospital transfers. In addition, appropriate documentation will need to be completed to form a record that represents the nature of the transfer. This should include documentation of observations and as a minimum will include;

- Heart Rate
- Pulse oximeter/saturations
- Blood pressure
- Temperature
- Respiratory Rate
- Any supplemental oxygen/ongoing IV infusions

This will likely need to be documented in paper form and then subsequently scanned into EPR as per current hospital policy. A summary record of the transfer should also be made on EPR and this will allow any issues during transfer to be highlighted to clinical teams. A paper anaesthetic record offers an ideal method of capturing this data.

Transferring Patients to Sites Outside of BTHFT

Preparing a Patient for Embrace Inter-Facility Transfer

The transport medicine environment is challenging. For transfer to occur safely your patient may need interventions that would not be performed if the patient remained in your hospital. To minimise the time the Embrace team needs to prepare the patient for transport, please consider the following list before the team arrives.

Documentation and Communication

- Be prepared to verbally handover to the Embrace team
- Update the parents on the child's condition and plans for transfer
- Photocopies of recent relevant notes, recent investigations results, drug chart
- Transfer letter with relevant history
- Highlight/document any safeguarding concerns*
- Transfer radiology by PACS (CD or hard copy are alternatives)
- Maternal blood sample (6m EDTA)- fully labelled with request form (babies under 3months) *
    - First name
    - Last name
    - Date of birth
    - NHS number
    - Date & time of sample
    - Name and signature of person taking sample

Patient Preparation

- ETT secured (Melbourne strapping is ideal for transfer)
- Position confirmed on CXR (T2 is ideal for transfer)
- Recent blood gas with blood sugar*
- Gastric tube*

- Minimum 2 points of IV access
- Infusions must be in 50ml fully labelled syringes
- Pupillary responses monitored and recorded regularly*

On arrival, the Embrace Team Will:

- Introduce themselves, take handover and assess the patient
- Review copies of patient documentation, charts and drug card
- Contact the Embrace Consultant as required
- Ensure patient is prepared for transfer
- Transport monitoring
- Check ETT and IV access are correctly positioned and well secured
- Check all infusions and swap to transport pumps
- Stabilise on transport ventilator and perform a blood gas
- Transfer to trolley and secure patient and equipment
- Communicate with parents and discuss travel arrangements
- One parent may be able to travel with their child (to be discussed with transport team)

Preparing for BTHFT Led Inter-Facility Transfers

There are occasions, albeit uncommon, where teams from BTHFT will need to transfer critically unwell children themselves. This may be due to the transfer being designated as time critical or where Embrace are unable to provide a transfer service for whatever reason. In the first instance, the stabilisation team, with support from Embrace/regional specialists, will determine if undertaking the transfer is in the patient's best interests. It may be considered more appropriate to continue to care for the patient at BTHFT whilst awaiting the availability of the Embrace specialist teams. If so, due consideration should be given to the guidance within the document 'Management of Surge and Escalation. Procedure for Children Requiring Intensive Care in the Absence of Paediatric Intensive Care Beds or Delay in Arrival of the Transport Team'.

After deciding to transfer, the stabilisation team will determine who are the best staff members to undertake this transfer. However, all patients who either have or may require advanced airway management on route will need to be cared for by the intensive care team in conjunction with the parent paediatric specialist team.

Consideration of the following details as taken from the Embrace document 'Preparing for Time Critical Transfers' will aid in preparing for a safe and effective transfer.

Documentation and Communication

- Update the parents on the child's condition and plans for transfer
- Photocopies of recent relevant notes, recent investigations results, drug chart
- Transfer letter with relevant history
- Highlight/document any safeguarding concerns*
- Transfer radiology by PACS (CD or hard copy are alternatives)
- Maternal blood sample (6m EDTA)- fully labelled with request form (babies under 3months)
    - First name
    - Last name

- Date of birth
- NHS number
- Date & time of sample
- Name and signature of person taking sample

Patient preparation

- ETT secured and position confirmed on CXR (T2 ideal for transfer)
- On transport ventilator with continuous ETCO2 monitoring
- Recent blood gas demonstrates adequate gas exchange and normal blood glucose
- Adequate analgesia, sedation and muscle relaxation
- Gastric tube
- Minimum 2 points of IV access and well secured
- Maintenance fluids and all other infusions fully labelled
- Pupillary responses monitored and recorded regularly
- Seizures controlled and metabolic causes excluded
- Maintain temperature above 36.5 oC (unless therapeutically cooled)
- Adequate patient monitoring for transport – ECG, BP, SaO2, ETCO2, Temp
- Patient and equipment adequately secured for transport
- Ensure emergency airway, breathing equipment and adequate gases available
- Ensure emergency fluids and drugs are available for transport

Minimum Suggested Equipment for 'Time Critical' Transfers

- Transport trolley (adult intensive care transport trolley is ideal)
- Age/weight appropriate child restraint device e.g. Paraid ACR
- Transport ventilator* e.g. BabyPac, VentiPac, Oxylog, Hamilton T1 Transport monitor
- ETCO2, NIBP and/or IBP, ECG, Sats, Temp
- Infusion pumps
- 'Grab bag' – appropriate drugs and equipment for time critical transfer should be immediately available and checked
- Always ring the destination unit before departure
- Ensure all equipment is safely secured to the trolley or incubator

Parents travelling in the Ambulance

The safety of the transfer/retrieval team, patient and any family travelling with the patient is the paramount responsibility of the Embrace staff.

Neither BTHFT or Embrace have a blanket policy regarding family travelling in the ambulance. This should be discussed on a case to case basis within the team. Individual medical and nursing staff may have different opinions, but at all times safety and patient wellbeing must be considered.

Considerations

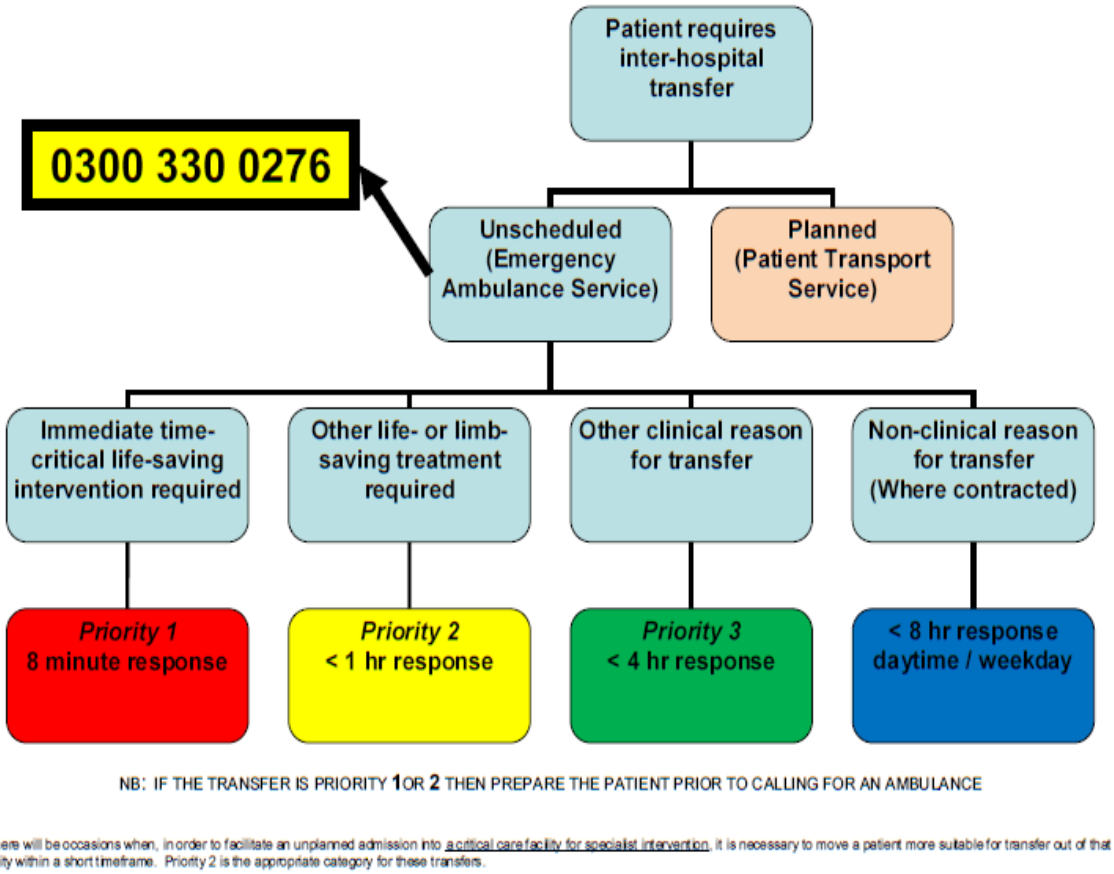
- The stability of the child

    - Assess the need for potential interventions
- Transport safety
    - All ambulance occupants must be in a forward or rearward facing seat with a 3 point restraint
    - Potential use of lights and sirens must be considered
- Child related issues- Anxiety caused by separation from parent
- Parent Signs of aggressive or difficult behaviour
    - Need to be emotionally supported. Parent requiring ongoing or acute medical support, mum must have been discharged from post natal care. This must be 24 hours post NVD and 72 hours post C section The accompanying parent must be able to access the ambulance unaided
- After a detailed history inform parents:
    - If they are able to travel and that it is at their own risk
- The level of transport: lights/sirens
    - If using lights and sirens, inform them that this is to facilitate movement through traffic and safety is paramount.
- Parent/patients personal property must be kept to a minimum One small bag that is able to fit in the ambulance cupboard, due to space limitations and safety implications of loose items, is their responsibility.
- Parents must not travel in front with the driver because:
    - It causes anxiety for the parent
    - Distraction for the driver
- If parents not travelling in the ambulance:
    - Give directions to the receiving hospital
    - Ensure they are aware they must not follow the ambulance

Requesting Inter-Facility Transport

The Yorkshire Ambulance Service NHS Trust will provide inter-facility transport as required according to clinical need and urgency. Their flow chart

for requesting transport is shown below.



As can be seen from the above flow diagram the local teams need to determine priority of response. Some examples of priority levels are shown below which may aid in deciding this.

Request an

'INTER-FACILITY TRANSFER'

Prepare the patient for transfer using local protocol. The patient should be ready to depart immediately on arrival of the ambulance crew.

NB: A CEN COMPLIANT TROLLEY SHOULD BE USED WHENEVER APPROPRIATE

Priority 1

Examples include:

- Neurosurgery (e.g. extradural, subarachnoid haemorrhage)
- Vascular surgery (e.g. leaking aortic aneurysm)
- Primary or Rescue coronary angioplasty (PCI)
- Paediatric sepsis or emergency not involving dedicated retrieval teams
- Major trauma treatment or management (e.g. transfer to Major Trauma Centre)
- Stroke transfer for thrombolysis
- Obstetric emergencies requiring immediate operative intervention (e.g. foetal distress)
- IABP transfers

Priority 2

Examples include:

- Sudden loss of vision
- Immediately limb-threatening injury, inc. open fractures (for orthoplastics)
- New onset ischaemic limb (NB: may be appropriate for *Priority 1* if immediate intervention planned)
- Cauda equina syndrome, spinal cord compression
- ENT emergency
- Transfer between CCU or ITU
- Admission to CCU or ITU (patient may not be ventilated)
- Obstetric complications not requiring immediate surgical intervention (e.g. failure to progress)
- Patient with monitors, infusions and/or sedation which cannot be disconnected for the journey
- Acutely sick patient in a non A&E hospital (e.g. community hospitals, Minor Injury Units, mental health hospitals, private hospitals (admission to NHS hospital))
- Child requiring >5 l/min oxygen
- Emergency renal dialysis, i.e. not a routine dialysis session
- Testicular torsion
- Mental Health patients under MHA
- Burns patients (for admission)
- Non-ST elevation MI or Acute Coronary Syndrome for admission to CCU

Priority 3

Examples include:

- Patient requiring intervention or investigation not available at current location (e.g. MRI scan, interventional radiological procedure)
- Transfer to specialist unit (e.g. inpatient haematological unit)
- Stroke patients for admission to Stroke Unit (not suitable for thrombolysis)
- Mental Health Patients (voluntary admission) where other form of transport not suitable
- Burns (not admission)
- Plastics
- Urology

Effective 1st October 2012

Documentation During Transfer

During Embrace delivered transfers, their specialist team will be responsible for maintaining a record of the details of transfer including clinical parameters. Similarly, during time critical transfers it is essential that there is adequate documentation to provide a clear summary of the relevant details for the receiving team and also to maintain a record of the patient's clinical status en route. There has recently been a transfer document produced by Embrace that is to be used for all non-Embrace delivered transfers. A copy of this is in the appendix and can also be found in the following hyperlink. Paper copies of this document will also be available in paediatric stabilisation and ED resus areas.

https://www.networks.nhs.uk/nhs-networks/yorkshire-humber-paediatric-critical-care-odn/guidelines/stopp-assessment-tool/file_popview

The frequency of recording observations will be determined by clinical need and influenced by the length of journey but should not be less than every 15 minutes. On arrival in the receiving facility, a handover will be provided and additional copies of the transfer record will be taken and returned to BTHFT to be scanned into our electronic record system in line with trust policy. Any critical incidents occurring during transfer should be noted on the form, details recorded on the patients' medical records and a Datix completed to enable follow up.

Transfer bag equipment list

Outside pocket
Child BVM, mask 0, 1, 2
Adult BVM, mask 3,4
Bag 1
OPA- 000, 00, 0, 1, 2, 3, 4
NPA- 3, 3.5, 4, 4.5
Bag 2
Child NRB facemask
Adult NRB facemask
Bag 4
Scissors
NG tube size 6, size 8
Aqualube x2 sachets
ET tube tie
Elastoplast
Transpore tape
Bag 5
Stethoscope
Adult and child magills forceps
Suction catheters- size 6, 8, 10, 12 (2 of each)
Cuffed ET tube size 3-8
Uncuffed ET tube size 2.5-7
Yankeur- adult and child (2 of each)
Suction tubing x2

Portex tracheal stylet- large and small
Syringe- 5, 10, 20ml
Laryngoscope handle x2
Miller blade 0, 1, 2
Mac blade 2, 3, 4

Bag 6

24g jelco cannula x4
Cannula- 22g, 20g, 18g (2 of each)
2x single smatsite extensions
2x triple smartsite extensions
Gloves- small, medium, large (2 of each)
Torniquet
Tagaderm- adult and child (4 of each)
Razor
50ml syringe x4
4x 5ml 0.9%NaCl syringe
Gauze x2
Chlorprep x4
Bandage x2

Bag 7

I-Gel- size 3, 4, 5
LMA- size 1, 1.5, 2, 2.5

Middle of bag

Syringe- 1ml, 2.5ml, 5ml, 10ml, 20ml (2 of each)
Blue needles x4
White needles x4
Blunt needles x4
IV spike x1
Spare laryngoscope bulbs x2
Pen torch
Drug labels x5
0.9% NaCl 10ml vial x5
Water for injection 10ml vial x5
Calculator
Chlorprep wipes
Syringe driver extensions x2
IVAC giving sets x2
Blood giving sets x2
ECG electrodes
Ayres T-piece circuit- 500ml
2l waters circuit
BNF
ET introducers- 5fr, 15fr
1x 500ml Hartmans
1x 500ml 0.9%NaCl

Special Circumstances

Sepsis

Sepsis is a clinical syndrome caused by the body's immune and coagulation systems being switched on by an infection. Sepsis with shock is a life-threatening condition that is characterised by low blood pressure despite adequate fluid replacement, and organ dysfunction or failure. Sepsis is a significant condition which can cause death in people of all ages.

Embrace supports The UK Sepsis Trust in their 'Sepsis 6' initiative. The guidance and clinical toolkits are produced in collaboration with NICE and support the implementation of NICE guideline NG51 (2016).

It is important to recognise the signs and symptoms of sepsis early and respond immediately, including review by an experienced clinician.

Embrace will welcome referral calls for clinical advice and/or critical care transfer relating to neonates and children with sepsis.

Please use the following link to documents on the Embrace website to support your care of children with proven or suspected sepsis.

https://www.sheffieldchildrens.nhs.uk/embrace/sepsis/

Neurosurgical Referrals

Neurosurgical emergencies demand prompt management to minimise the risk of significant brain injury. All hospitals should have the facility to urgently transfer these patients should a time-critical transfer be required. Embrace will provide advice and assist with co-ordinating these transfers.

Please see the section on time critical transfers and preparing a patient.

Neurosurgical emergencies should be accepted in Leeds or Sheffield for definitive treatment regardless of their PICU bedstate. In these scenarios, the neurosurgeons will liaise with the necessary departments and arrangements will be made for their continuing care after they have received definitive treatment.

In all cases CT images need to be sent electronically via PACS to the receiving neurosurgical teams. At the very least a CD or hard copy must be sent with the patient.

Acute Embrace neurosurgical referral pathways can be seen in Appendix 3.

Burns Referrals

Embrace will assist in the referral of children with burns to regional services and transfer children who require ongoing critical care.

Sheffield Children's Hospital has a Burns Unit, with intensive care support, and can provide care for children with burns up to 30% total body surface area (TBSA).

Pinderfields Hospital has a burns unit and can provide care for children up to 15% TBSA except for infants under one year when the threshold is 10% TBSA.

Leeds General Infirmary has on-site plastics specialists but no burns services. The intensive care can look after children with minor burns only but suffering with other problems such as smoke inhalation.

Manchester Children's Hospital has a burns centre and care for the full range of burn injuries including intensive care.

Please refer to the Yorkshire & Humber Burns Pathway document for more details including contact numbers to discuss cases directly with your local service.

Yorkshire and Humber burns pathway can be seen in Appendix 4.

Please use the Northern Burn Care Network documentation when caring for, referring and transferring children with burns. This can be found here
http://www.sheffieldchildrens.nhs.uk/embrace/burns-refferals

Inherited Metabolic Diseases

Inherited metabolic diseases are genetic disorders that result in problems with the metabolism. A defective gene causes an enzyme deficiency which means that certain essential substances found in food can't be converted properly by the body.

Embrace transfers patients with inherited metabolic diseases to the specialist centres in Sheffield and Manchester. Embrace recommend that referring teams refer to the British Inherited Metabolic Diseases Group emergency guidelines.

http://www.bimdg.org.uk/site/guidelines.asp

Embrace are able to conference call specialists in inherited metabolic diseases for further advice as required.

Governance

The Stabilisation Group meets monthly and includes representation from Embrace, paediatric medical and nursing and critical care. Its terms of reference ensure that it provides oversight of service issues, locally defined Key Performance Indicators, audit outcomes, guidelines, and individual case reviews. The Group reports to the Paediatric Clinical Governance Group, which in turn reports to the Women & Children's Divisional Clinical Governance meeting.

A quarterly audit of the Stabilisation Unit is undertaken using defined audit criteria. A monthly report of equipment checking processes is undertaken. The Head of Nursing for paediatrics will be responsible for the production of the reports, which will be presented to the Trust's Resuscitation Committee for oversight as well as through the Stabilisation Group.

All activity within the stabilisation room is reported via the Paediatric Matron during working hours and out of hours activity is reported to the Clinical Site Matron for inclusion in the daily clinical site report. This provides visibility to senior managers and the executive team.

An annual report on the Paediatric Stabilisation Unit is provided through the governance structure and to the Trust's Patient Safety Committee.

References

- Embrace Guideline Documents. Including;
  Preparing a patient for embrace and time critical transfers, parents travelling in ambulances, neurosurgical and burns referrals pathways, sepsis and metabolic disease management, intubation checklist. https://www.sheffieldchildrens.nhs.uk/embrace/#274-guidelines-forms-and-documents accessed Septmeber 2018
- North West Transport Service. http://www.nwts.nhs.uk/clinicalguidelines accessed september 2018
- Referral and transfer of the critically ill child. D Gilpin, S Hancock. BJA education, 16(8): 253-257 (2016)
- http://www.nnuh.nhs.uk/publication/intra-hospital-transfer-of-children-ca5117-v3/ accessed September 2018
- West Yorshire Critical Care Operational Delivery Network, transfer guidelines. https://www.wyccn.org/uploads/6/5/1/9/65199375/wyccodn_transfer_guidelines_2018_final.pdf accessed September 2018.

Appendix 1

Paediatric Pre-Intubation Checklist

1. Patient Preparation	
Position – ear to sternal notch alignment	□
Intravenous / Intraosseous access x 2 (preferable) or 1 good access	□
Fluid connected for drug flush + Fluid bolus draw up	□

BP cuff on contra lateral arm / leg set 2-5 min interval	☐
ECG monitoring	☐
SpO2	☐
End Tidal CO2 connected to bag-mask, HME filter, catheter mount.	☐

2. Oxygenation Strategy	
Pre-oxygenation in place (BVM / NRB mask 15L/min)	☐
Consider air blender in cardiac patients	
Gastric tube available	☐
Ambu Bag / Ayres T piece (<25kg) / Mapleson C (>25kg) available	☐
Ventilator set up	☐

3. Airway Equipment..	
Laryngoscope (1st and 2nd choice) **CHECK BATTERIES**	☐
Consider additional advanced equipment CMAC, glide scope etc	☐
Bougie (2 sizes available – check bougie fits down ETT) **AND** Stylet	☐
Suction. Yanker attachment and correctly sized suction catheter	☐
2 x ETT (with cuff checked if appropriate)	☐
Syringe and lubricant	☐
Tapes for securing	☐
Paediatric cuff manometer if required	☐
Oropharyngeal airway	☐
Nasopharyngeal airway NOT IN SUSPECTED BASE OF SKULL #	☐
LMA	☐

4. Drugs	
Induction agent dose drawn up	☐
Induction neuromuscular blocker dose drawn up	☐
Post intubation neuromuscular blocker dose drawn up	☐
Emergency drugs AND fluid bolus at bedside. Drug doses discussed and drawn up if necessary.	☐
Post intubation analgesia available	☐
Post intubation sedatives available	☐

5. Team Brief	
Difficult laryngoscopy / failed intubation plan discussed	☐
Is a Rapid Sequence Induction required?	☐
Roles allocated: • Airway assistant • Cricoid pressure • Drugs • Cervical immobilisation if necessary (remove collar) • Pulse check	 ☐ ☐ ☐ ☐
Parents aware.	☐
TIME OUT. INTUBATER AS TEAM LEADER. QUIET UNTIL TUBE PLACEMENT CONFIRMED	☐

EMBRACE TRANSPORT RECORD

EMBRACE NUMBER	2	0	1	7					PATIENT NAME	

NHS NO.											DOB	D	D	M	M	Y	Y	Y	Y	DATE	D	D	M	M	2	0	1	7

Advanced Airway* Placement by Embrace Team, at any time
(*ETT/LMA/tracheostomy/cricothyrotomy)

Pre-Intubation checklist		Post-Intubation documentation	
Decision making -Why are we anaesthetising this patient? …… -Is Person protective equipment required?	Y / N	-Pre-oxygenated optimally -Suction used -MILS employed -Cricoid pressure employed	Y ☐ N ☐ Y ☐ N ☐ Y ☐ N ☐ Y ☐ N ☐

STOPP Tool

Please use Safe Transfer Of Paediatric Patient assessment tool for all inter-hospital transfers in Yorkshire & Humber

Once transfer complete send a copy from an nhs.net email to Paediatric Critical Care ODN for audit: karen.perring@nhs.net

Family name:	First name:
Date of Birth:	Age:
NHS No:	
Hospital Number:	
Address:	
Post code:	
GP Name:	GP Practice:

Weight: Kg Actual/Estimate	Age:
Date of referral:	D D M M Y Y Y Y
Time of referral:	H H M M
Call made by:	(Name, signature, grade)

CONTACT DETAILS			
Referring Consultant		Receiving Consultant	
Referring Hospital		Destination Hospital	
Ward / Area		Ward / Area	
Ward phone number:		Ward phone number:	
Mobile number:		Mobile number:	

Please describe details of case including any discussion with external specialists (SBAR format may be used if wished)

Problem:

Indication for transfer (please tick)	Escalation of treatment	Investigations	Repatriation	Bed Capacity	Palliation

For all bed capacity transfers you must follow your internal escalation policy and prioritis e transfer of a level 0 patient wherever possible. Please document any discussion in patients' notes.

Consensus risk assessment

PERFORM RISK ASSESSMENT ON PAGE 2 THEN TICK RESULTS CATEGORY BELOW:

TRANSFER CATEGORY		TRANSFER TEAM	
Transfer no longer required		Local Hospital Team	
Ward level (level 0)		YAS/EMAS + Parents +/- nurse only	
Basic critical care (HDU / PCC level 1)		Paediatric: Doctor/ANP + nurse	
Intermediate critical care (PCC level 2)		Anaesthetics: Doctor + nurse/ODP	
Advanced critical care (PCC level 3)		Hybrid Paediatric + Anaesthetic team	
AND/OR Time Critical		OTHER	
ASSESSMENT COMPLETED BY (date / time)		Embrace	
Nurse: (Name, Role, Signature)		Other transport team	PIC / Neonatal
Doctor: (Name, Role, Signature)		Ambulance crew requested	
		Standard crew	Paramedic crew

Yorkshire & Humber PCCN STOPP Tool adapted from North West & North Wales document and original STOPP Tool (Thames Valley Paediatric Critical Care Network) by S Hancock January 2019 – waiting final approval

SYSTEM	RISK ASSESSMENT PRIOR TO TRANSFER	ASSESSMENT
A	Stridor / Stertor or anticipated AIRWAY RISK ie foreign body / difficult airway Airway or facial burns, smoke or gas inhalation?	YES / NO
B	Respiratory Rate = [ ] Above or Below normal age adjusted range?	YES / NO
	Respiratory distress of concern ie marked recession / ↑WOB or early exhaustion	YES / NO
	Oxygen Need > 2L/min to maintain SpO_2 > 94% OR High Flow / CPAP / BiPAP	YES / NO
	Intubated & Ventilated	YES / NO
C	Systolic BP = [ ] Is it outside normal age adjusted range?	YES / NO
	HR = [ ] Is it outside normal range OR Capillary Refill > 2 secs?	YES / NO
	Is Blood Gas Lactate > 2 OR Base Deficit > 2	YES / NO
	Fluid boluses > 40 ml/kg within last 6 hours + / - inotrope infusion	YES / NO
	Risk of cardiovascular collapse: enlarged liver, oliguria, abnormal heart rhythm	YES / NO
D	Level of consciousness USING A V P U = P or U / GCS < 9 or falling / fluctuating level	YES / NO
	Risk of progressive intracranial event or signs of raised ICP ie bradycardia; hypertension; abnormal breathing; unequal, dilated or fixed pupils	YES / NO
	Prolonged hypoglycaemia (not correcting) AND / OR raised ammonia	YES / NO
	Unrecognised injury / trauma eg laceration / punctures OR Major Trauma	YES / NO
E	Inadequate ability to maintain normothermia (despite treatment / intervention)	YES / NO

ARE ANY [A] [B] [C] [D] [E] CRITERIA TRIGGERED?

If yes, paediatric + / - anaesthetic consultant (s) should review patient and agree transfer with senior nurse on duty. Use table below to determine appropriate team required to transfer patient

Only if indicated and following consultant review contact Embrace : 0845 147 2472 for advice before transfer

TRANSFER CATEGORY	ANY TRIGGERS	STAFF REQUIRED (examples only)	D/W Embrace
Level 0 (ward level) Child not on continuous monitoring	Non-anticipated	Parent / carer or Nurse or both Standard ambulance crew / transport	NO
PCC Level 1 (Basic critical care) Children needing continuous monitoring or iv therapy or any PCC Level 1 Care	1. No	Competent Nurse or Doctor (essential if on iv fluids / drugs) OR paramedic ambulance crew	NO
	2. YES	Competent Nurse &/or Doctor & Paramedic crew	PROBABLY
Can be a difficult transfer: Joint decision /agreement between senior nurse & consultant essential before transfer	3. YES AND High Flow Oxygen, OR potential for airway or other compromise	Nurse/ODP & airway and paediatric resuscitation competent Doctor & Paramedic ambulance crew OR Embrace transfer (if agreed jointly with referring consultant + Embrace consultant)	YES
PCC Level 2 (Intermediate critical care) PCC Level 1—acute intervention for more than 24 hours	YES / NO	Nurse/ODP & airway and paediatric resuscitation competent Doctor & Paramedic ambulance crew OR Embrace transfer (if agreed jointly with referring consultant + Embrace consultant	YES
Level 3 (Advanced critical care) Intubated and Ventilated	Yes / No	Embrace transfer unless time critical	YES
Time Critical (Level 1-3) **Major Trauma, Ischaemic gut, Life or Limb threatening diagnosis**	**Yes / No**	**Local Team: Nurse/ODP & airway and paediatric resuscitation competent Doctor & Paramedic crew** **REFER TO REGIONAL PAEDIATRIC TRAUMA GUIDELINE**	**YES**

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TRANSFER DOCUMENTATION:

PERSONNEL

Doctor 1 (name, speciality & grade)

Doctor 2 (name, speciality & grade)

Nurse / ODP (name, speciality & grade)

Parent /guardian details (including mobile no) In ambulance: Yes / No

EQUIPMENT		Drugs/Fluids:	
Appropriate drugs & equipment available	Yes / No	Analgesia (as required)	Yes / No
Suction unit & batteries fully charged	Yes / No	Intubation drugs + equipment	Yes / No
Sufficient oxygen in portable cylinder available	Yes / No	Emergency / resuscitation drugs	Yes / No
Appropriate harness available eg ACR harness	Yes / No	IV Fluids (including maintenance + bolus)	Yes / No
Charged batteries for monitor and/or infusion pumps	Yes / No	Blood Products	Yes / No
Infusion devices rationalised and safely secured	Yes / No	Other eg anticonvulsants / antibiotics etc	Yes / No

COMMUNICATION

Bed in destination hospital identified and availability confirmed (with nursing team / bed manager): Yes / No

Consultant in destination hospital has agreed transfer: Yes / No

Parents / Carers informed of transfer and any parental concerns discussed: Yes / No

Parents / Carers given map/postcode & ward contact number if not travelling with the team: Yes / No

Parents / Carers invited to accompany the child or separate transport arranged to receiving unit: Yes / No

ALERTS eg allergies, safeguarding, CAMHS etc clearly documented AND verbally communicated to receiving team: Yes / No

TRANSPORT		AMBULANCE reference number:	
Time ambulance called:		Patient secured using weight appropriate harness:	Yes / No
Time ambulance arrived (referring hospital):		All equipment appropriately secured in ambulance:	Yes / No
Time transport team + patient left referring hospital:		Mobile phone available:	Yes / No
Time of arrival at receiving hospital:		Return travel organised / confirmed & team aware:	Yes / No
Time transport team arrived back at base hospital:		Money /cards for emergencies (transfer team):	Yes / No

PATIENT SPECIFIC INSTRUCTIONS FOR TRANSFER

MINIMUM monitoring: ECG, SpO_2, NIV BP: Yes / No

If intubated & ventilated monitor ET CO_2 IV access x 2: Yes / No

Nil by Mouth / consider NG tube for surgical patients : Yes / No

Blood glucose, temp & pupils checked before +/- after transfer: Yes / No

Maintenance IV fluids +/- iv anti-emetics (esp. older child): Yes / No

Other:

PAPERWORK FOR TRANSFER (PHOTOCOPY THE FOLLOWING TO TAKE WITH PATIENT):

Referral letter: Yes / No

Recent clinic letter / summary for all longterm patients: Yes / No

Current medical & nursing notes including blood results, blood gases + copies ECG/rhythm strip (as appropriate): Yes / No

Current drugs chart, PEWs/observation chart and fluid charts: Yes / No

Request radiology uploaded onto PACS or CD of radiology to be transferred with patient: Yes / No

OBSERVATIONS RECORDED ON TRANSFER:

☐ Observations completed and recorded just prior to departure

☐ Continuously monitor all observations during transfer & record (circle choice) every 15min / 30 mins

☐ Observations completed and recorded on arrival

Pain assessment

Time last analgesia (drug / dose):

Date	Pre Departure					Transfer								Arrival		
Time																
Temperature + site °C																
Heart Rate & Blood Pressure	240															240
	230															230
	220															220
	210															210
	200															200
	190															190
	180															180
	170															170
	160															160
	150															150
	140															140
	130															130
	120															120
	110															110
	100															100
	90															90
	80															80
	70															70
Respiratory Rate	60															60
	50															50
	40															40
	30															30
	20															20
	15															15
	10															10
	5															5
	0															0
FiO_2																
SpO_2 +/- ET CO_2																
Type / mode Resp support																
PIP/PEEP																
Rate																
Tidal Volume																
Neurological Assessment	AVPU															
	Pupil R / L															
	Bld Glucose															

Details of any treatment(s) given or incident(s) en-route:

Care handed over to (name / grade): **Time handed over:**

Handover delivered by (name / grade): **Signed:**

3 Copies STOPP form (for patient notes at both referring and receiving hospitals, & PCCN audit) ☐

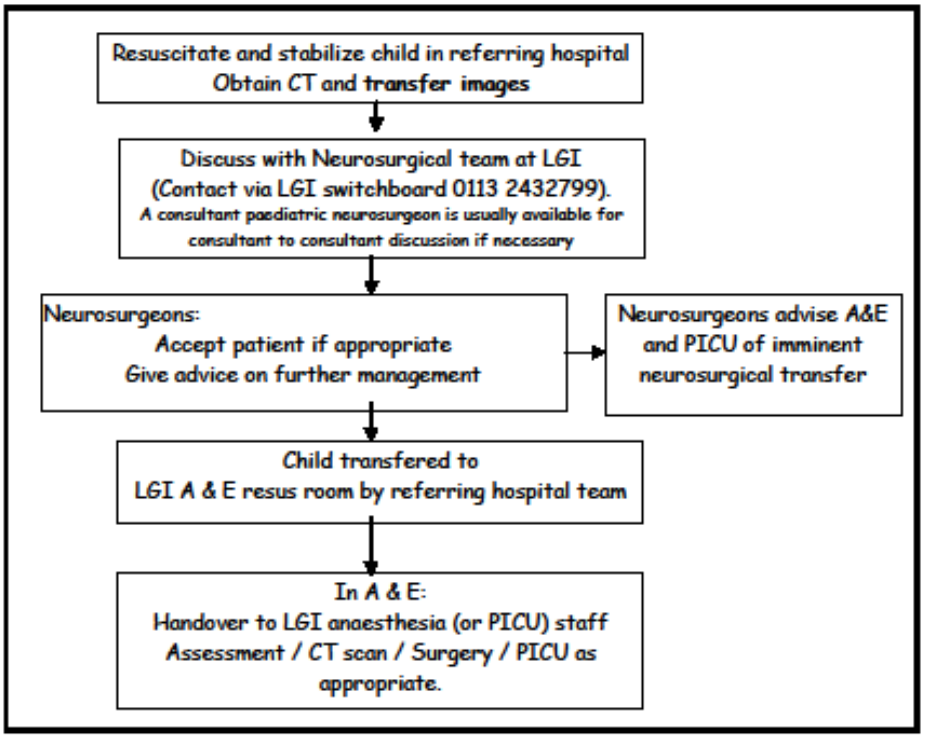
Patient documentation handed over: ☐ **All drugs/fluids/blood products handed over / disposed of:** ☐

Yorkshire & Humber PCCN STOPP Tool adapted from North West & North Wales document and original STOPP Tool (Thames Valley Paediatric Critical Care Network) by S Hancock January 2019 – waiting final approval

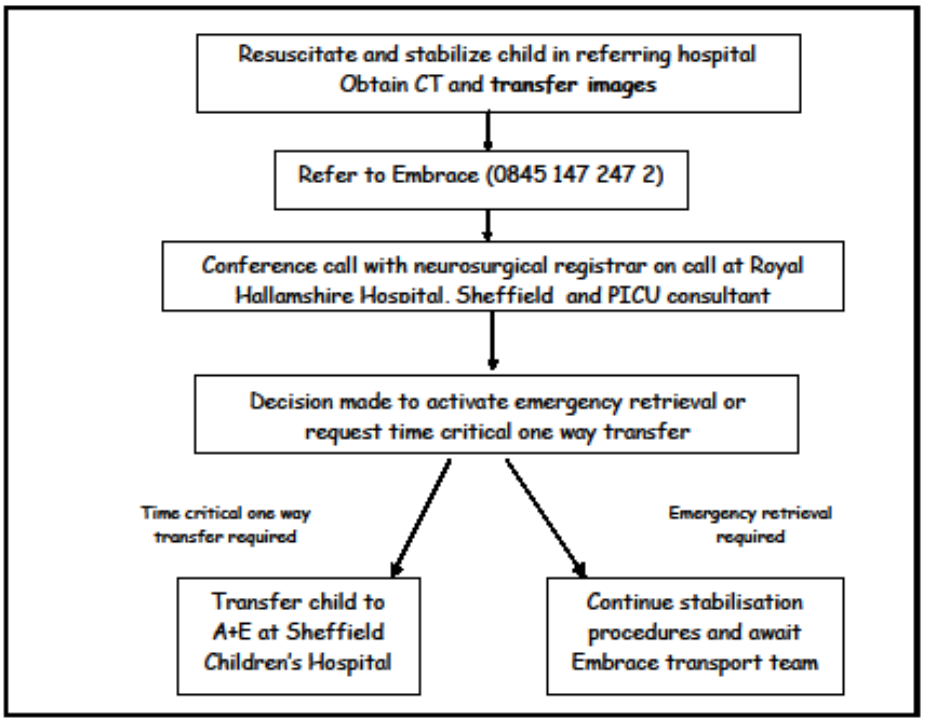
Appendix 3

Embrace Acute Neurosurgical Pathways

Leeds

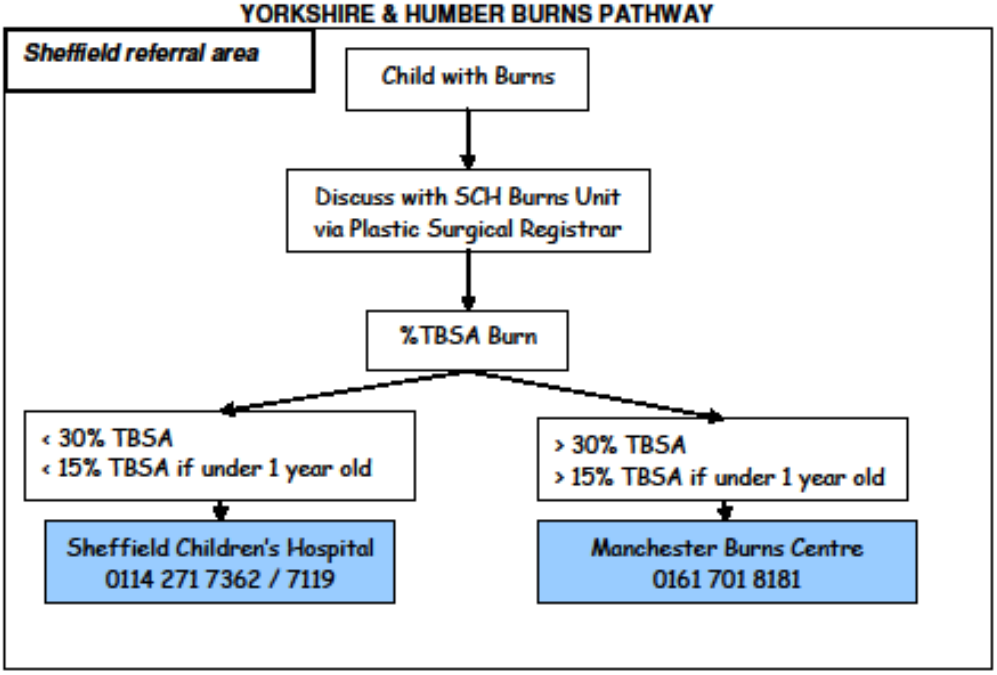


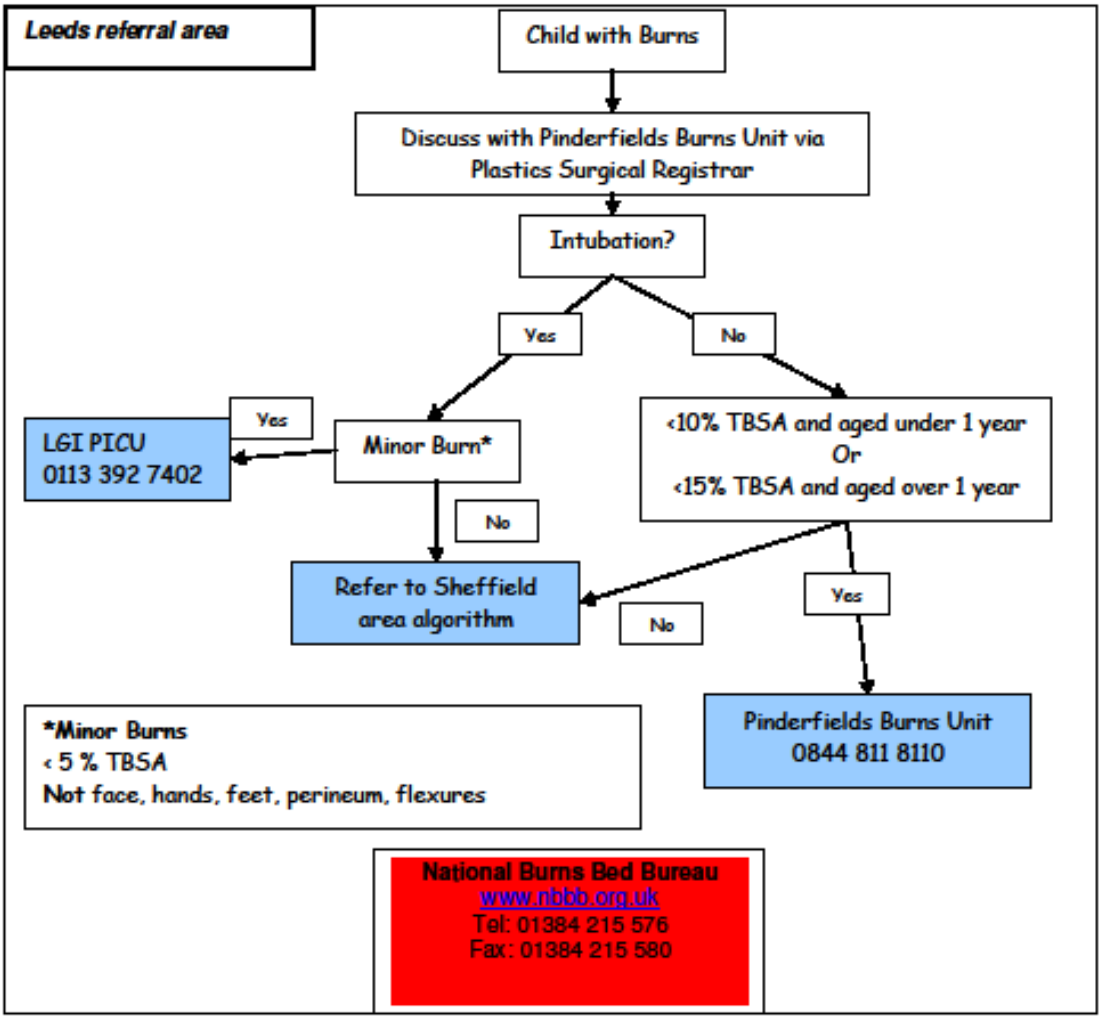
Sheffield



Appendix 4

YORKSHIRE & HUMBER BURNS PATHWAY





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