2014/15 ANNUAL REPORT

NWTS

North West & North Wales
Paediatric Transport Service

CONSULTANT REFERRAL LINE

08000-84-83-82

WEBSITE

WWW.NWTS.NHS.UK

Rajesh Phatak, Bron Robinson & Liz Waltho with pilots from The Children's Air Ambulance after their 100th transfer

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FOREWORD

Now in it's 5th year of operation the **North West and North Wales Transport Service** (NWTS) has received over 4,000 referrals and transferred over 2,500 children. This achievement is only possible with the close collaboration of our District General Hospital partners and both of the tertiary centres in region. The recent formation of paediatric networks in region has strengthened this collaborative approach.

For a 2nd year we were fortunate to secure additional funding to run a Repatriation Service during winter months, transferring recovering patients back to their local hospital to complete treatment, releasing tertiary hospital beds for other patients.

Despite this, last winter NWTS transfered more patients out of region and we are very grateful to our neighbouring regions for their help during this time of peak activity. NWTS were able to place the majority of North West England and North Wales patients as close as possible to their homes to minimise the impact of an out of region transfer as far as possible.

NWTS team members have represented the region on various national bodies again this year, feeding into work on paediatric high dependency care and transport training in particular.

Kate Parkins
Lead Consultant

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Clinical Nurse Manager

EXECUTIVE SUMMARY

HIGHLIGHTS OF 2014/15

- Overall increase in the number of children referred to NWTS, either for advice or transfers performed
- Development of a National Paediatric Intensive Care Transport Competency Passport in conjuction with colleagues from CATS and STRS; now ratified by PICS Acute Transport Group, PICS council and RCPCH
- Delivery of a comprehensive outreach education programme and annual conference
- A comprehensive overhaul of NWTS in-house training programme
- Delivery of winter repatriation service for 2nd year
- NWTS team involved in 100th patient helicopter transfer by The Children's Air Ambulance

BACKGROUND

Ideally, all paediatric inter-hospital transfers should occur at the right time, be done safely by the right team to the right place (ie wherever possible each child should undergo one transfer only).

In 1995 in the UK a 10 year old boy with an acute intracranial bleed, requiring stabilisation and transport to an appropriate specialist Paediatric Intensive Care Unit, did not receive such care.

After publication of the resulting inquiry, the Department of Health produced a landmark report on paediatric intensive care (PIC) development and configuration, 'A Framework for the Future' which outlined the strategic direction for streamlining children's intensive care services in the United Kingdom. Its' long-term vision was of a 'high quality integrated service organised and delivered around the health care needs of children' and that a transport service must be funded and staffed on a 24 hour basis for each geographical area.

The subsequent rationalisation and centralisation of PIC and specialist paediatric services has meant the demand for inter-hospital transfer of critically ill or injured children over the last seventeen years in the UK has increased. Initially transport teams were drawn from within the staffing of individual units. With increasing admissions to PIC, individual units have struggled to provide appropriate teams as the demands of the units are such that their immediate priority is to the children already in their care.

In addition, changes to medical training with the introduction of European Working Time Directive and Staffing Out-of-Hours (Hospital at Night) has meant that the actual time spent in the clinical area and the exposure to the more challenging aspects of critically ill infants and children is reduced.

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This change in working practice affects all medical training which leaves both the referring and receiving units, by its very nature, exposed to the potential risks associated with unfamiliar clinical scenarios, the stressful environment this creates and the ability to rapidly interpret a child's clinical condition.

Evidence from literature supports the development of specialist transport services and demonstrates that centralisation and patient volume are associated with improved outcomes, both in morbidity and mortality rates; that practitioners who care for and transport children on an infrequent and ad hoc basis may be unable to maintain the high level of skills such care requires; and that with the establishment of a dedicated transport team the best interests of the child and family would certainly be served.

Therefore, regional transport teams have been developed in the UK over the last 15 years. These are either unit-based or stand-alone and provide dedicated specialist teams for the transport of the critically ill or injured child.

The service provided by NWTS demonstrates the role and benefit of such dedicated regional transport teams.

ROLE

NWTS is a stand-alone regional transport team based in North West England. It is a specialist multi-disciplinary team, providing expert advice, stabilisation and transport of critically sick or injured children from the 29 referring centres within North West of England and North Wales to one of the two lead centres providing Paediatric Intensive Care in region (Royal Manchester Children's Hospital – RMCH and Alder Hey Children's Hospital – AHCH), or further afield when necessary. Out of approximately 1.7 million children in North West of England and North Wales, the 2 Paediatric Intensive Care units in region admit almost 2,000 patients per annum combined. Over the last 5 years, since launching the Service in November 2010, NWTS has transferred 2,500 children, ie increasing to more than 650 patients each year.

The service was established because the 2 PIC units found it increasingly difficult to maintain their own unit-based teams. Previously the transport team would be taken from the staff (nursing and medical) working on the unit, if appropriate, if staff were available, and the unit's workload permitted. As a consequence, almost 40% of transfers into the 2 Paediatric Intensive Care Units were being undertaken by non-specialist teams from the referring hospitals in 2009-2010. During a review of the service provision in region, referring teams voiced serious concerns about the risks involved when these transfers were done by ad hoc teams, in addition to difficulties releasing their own staff, especially out-of-hours.

BENEFITS OF REGIONAL TRANSPORT TEAMS

Since launch in November 2010, NWTS has provided a 24/7 365 days/year service, via a single referral telephone number. NWTS are able to offer specialist paediatric critical care advice and a triage facility for all PIC referrals. A major improvement since launch is that once a patient is accepted for transport it is the transport teams' responsibility to arrange an appropriate PIC bed, which allows the referring team to concentrate on stabilisation of the patient. NWTS are also able to bring appropriate specialists into the referral call using a conference call facility. This is a more efficient use of time, ensures that the referring team receives appropriate advice early in the stabilisation period, and reduces confusion that can occur if specialists are perceived to give conflicting advice via 2 separate calls.

Since November 2010 NWTS has provided a team to transfer more than 90% of patients requiring PIC.

EQUITABLE ACCESS

NWTS is based centrally in region (not on one of the tertiary hospital sites) to enable the team to provide equitable access to the service for all patients regardless of geographical location at presentation. The decision was based on local referral data, discussion with the regional emergency ambulance provider, and review of motorway access. Choosing this site ensures that the majority of referring units within the North West of England and North Wales region are within 30 minutes-1 hour travelling time by road from NWTS base.

DEDICATED AMBULANCE PROVISION

Prior to NWTS ambulances were requested by PIC teams as required from the local 999/emergency ambulance provider, which often led to delays mobilising the team due to pressures on the ambulance service and would have an impact on emergency ambulance provision.

Dedicated ambulance provision since launch has improved NWTS mobilisation times. Familiarisation of the route to each hospital in region and the 2 tertiary centres also minimises journey times for patient and team. Our ambulance drivers have blue light training as per national guidelines and undergo additional training with the team eg from securing patient on trolley using Paraid harness to basic life support so that they can help with CPR if required. They are invaluable members of the NWTS team.

ADMINISTRATION TEAM

NWTS admin team are a key lynch pin and are the hidden part of the service. They provide the clinical team with the ability to respond to all referrals in a timely fashion, including conference calls with specialist teams when required. This is essential when the clinical team are out transferring patients throughout region. It is often very challenging when dependent on mobile network coverage and thankfully they are very resourceful in tracking the team down. If at any time a NWTS team member cannot be contacted and urgent advice is required the admin team will seek help from PIC consultants at either of the tertiary centres.

The admin team also play a crucial role in data management, audits, reports (including annual report), website and organisation of NWTS conferences.

MISSION STATEMENT

The North West and North Wales Paediatric Intensive Care Transport Service aims to provide the highest quality paediatric intensive care for children and their families from the first point of contact to the final unit destination.

THE SERVICE

- Provides easy access and service co-ordination for referring children's units
- Facilitates improvements in transport provision for critically ill children
- Co-ordinates all available regional resources to meet fluctuating demands
- Provides telephone advice and triaging facilities for all referrals
- Facilitates the delivery of the most appropriate care, in the most appropriate place, for any infant or child requiring Intensive Care in the North West / North Wales Region
- Education and outreach for the District General Hospital
- Audit and research will form part of the service provision

THE GUIDING PRINCIPLES

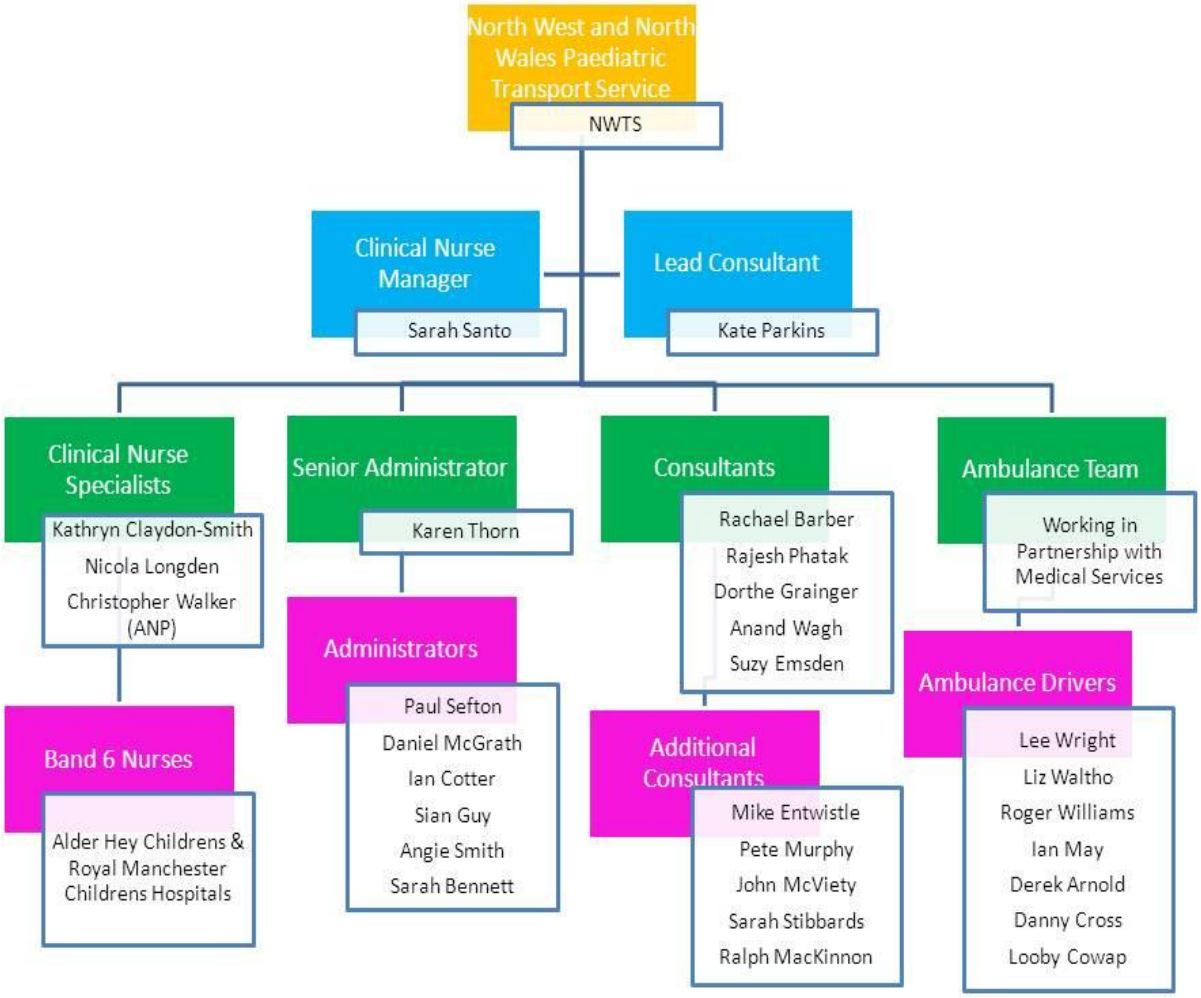
- A collaborative and inclusive service working with colleagues across North West England and North Wales
- Close working with the regional Paediatric Intensive Care Units
- Rigorous audit with regular presentation and dissemination of information to the two provider units
- Close collaboration with adjacent transport services

SERVICE STANDARDS

THE FOLLOWING CORE STANDARDS APPLY

- All infants and children requiring critical care will receive the appropriate treatment, in the right place, at the right time.
- The transport service will undertake to find an appropriate Paediatric Intensive Care (PIC) bed within the North West Region (or appropriate alternative) for those deemed to require intensive care.
- Any child within the North West Region requiring PIC can usually expect the transport team to be mobilised within 30 minutes from the decision to transfer.
- Any child within the North West Region requiring PIC can usually expect the transport team to be at their bedside within 3 hours of the decision to transfer.
- When the teams are on transfer, it will be necessary to prioritise referrals according to clinical needs.
- Early expert clinical advice and management by Consultants trained in Intensive Care is available to referring hospitals at all times.
- The clinical team comprises of a transport doctor (with at least 6 months experience in the intensive care environment) and a band 6 or above with relevant experience in PIC, with an appropriate intensive care qualification. Both staff groups will be APLS accredited.
- Education and training of the transport staff is a fundamental part of the Service.
- Outreach education for referring units is provided.

ORGANISATION CHART



ADVICE

Early referral to regional transport teams, who are able to provide advice from a consultant paediatric intensivist on patient management, may prevent deterioration and the need for transfer to Paediatric Intensive Care. Approximately 30% of referrals to the NWTS Team do not result in transfer to a tertiary centre, ie the patient improves following appropriate discussion, advice and shared management responsibility between the transport consultant and the referring consultant. With this comes the humanitarian cost saving with regard to the issue of separation of the child and family, as the child is managed closer to home. Patients are followed up for a minimum 24-48 hours to ensure that their condition stabilises.

Advice given is based on the information provided, and clear communication about a patient's history and clinical state is key to the success of this process. To improve this, NWTS have a referral proforma on their website to help the referring teams gather the information required. Essentially it is important that a brief history including relevant past medical history is included, with up-to-date clinical observations, an ABC assessment including examination findings and any blood results including blood gases and a lactate.

Clinical advice on stabilisation of the child is delivered using an ABC approach. Neonates and children come in a variety of ages and sizes, and emergency on-line drug calculators (eg www.crashcall.net used in North West of England and North Wales region) in addition to regional/national guidelines help to improve confidence in prescribing and administering appropriate drugs. NWTS, like other regional transport teams, have guidelines on their websites to improve access.

NWTS audits of patients referred have shown the positive patient benefits of advice and use of regional guidelines over the last 4 years.

TRIAGE AND USE OF RESOURCES

NWTS provide specialist paediatric transport teams, including consultants when needed, which aim to deliver a safe, therapeutic environment for paediatric patients that require urgent or emergency transfer between hospitals, ie a mobile paediatric critical care bed. The team aims to provide early stabilisation and initiation of advanced care at the referring hospitals, with continuation of critical care treatment and monitoring en route to tertiary care hospital.

NWTS is currently staffed to provide 650 PIC transfers per year, with nursing and trainee medical staff that rotate from either of the 2 regional PICUs. Consultants and the senior nursing team are primarily based with NWTS. Staffing resources allows NWTS to run 1 team 24/7 all year round, and an extra team for 12 hours/day during winter (3 months only) to meet times of high demand. If multiple simultaneous calls are received the NWTS consultant will triage referrals based on clinical need.

NWTS will transfer a patient from the North West of England and North Wales region to an appropriate PIC bed whether that is in-region or out-of-region (eg for ECMO or semi-elective transfers to quaternary services).

NWTS co-ordinate all referrals to PIC in region, reducing the number of calls made by referring teams especially at times of peak demand. The average PIC transfer by NWTS (unless time critical) takes approximately 4 hours. This knowledge allows the receiving PICUs to plan their admissions and discharges more effectively and has led to better utilisation of PIC beds in-region with reduction of out-of-region transfers for capacity reasons. Prior to NWTS, between 50-100 patients per year were transferred out-of-region, due to lack of PIC capacity in-region. Since NWTS started in November 2010: 2 (2011-12), 7 (2012-13) and 18 (2013-14) have been transferred out-of-region due to lack of capacity. However, this last 12 months has seen 44 children being transferred out-of-region due to lack of PIC capacity.

An additional NWTS team is mobilised to cover any out-of-region semi-elective transfers for quaternary treatment (eg transfer to London for tracheal surgery) to ensure that the region still has a team to cover any emergency transfers. NWTS transfers between 20-30 patients per annum out-of-region for specialist treatment.

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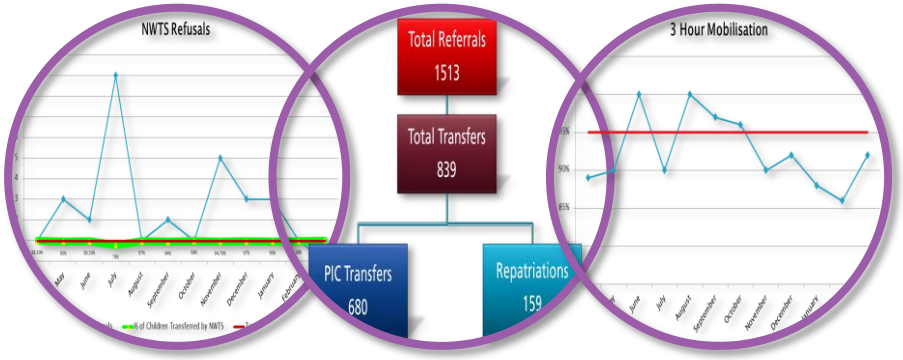
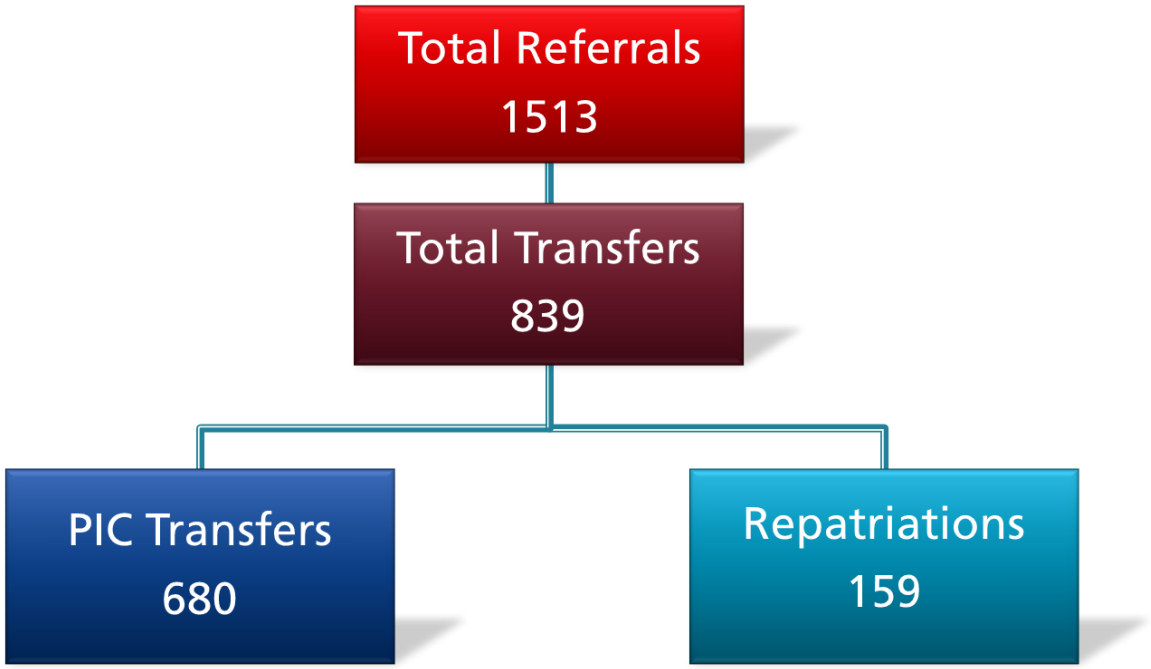
DATA



NWTS REFERRAL DATA 2014/15



CLINICAL GOVERNANCE

QUALITY IMPROVEMENT & KEY PERFORMANCE INDICATORS

As part of an on-going quality and safety program a number of performance indicators are continuously audited by the North West and North Wales Paediatric Transport Service. These quality performance indicators are also part of national standard monitoring.

ALL CHILDREN REFERRED SHOULD BE PLACED WITHIN THEIR DEFINED CATCHMENT AREA

Within the North West of England we are fortunate to have the two largest children's hospitals not only in the UK but in Europe.

The Royal Manchester Children's Hospital had a 'state of the art' new facility built in 2006.

Alder Hey Children's Hospital in Liverpool is in the process of being rebuilt at an adjacent site. Planned completion and commissioning by September 2015.

This means that very few children have to travel outside the region to receive specialist paediatric care.

It also means that there is a large capacity of children's intensive care beds; however this is finely balanced as they serve a very densely populated area, with a very mixed demography.

When the NWTS Service was set up the placement of children between both tertiary centres was very closely monitored. Each referring unit has its' lead centre; these were based on contracts and historical pathways. This means that the child is placed as near to home as possible.

In 2014-2015 the number of children referred to NWTS was 1513.

44 children were transferred out-of-region due to the lack of capacity in the North West Region.

This is a regional PIC refusal rate of 6%, meaning that the target to place children within their defined catchment area was met for 94% of patients NWTS transferred.

TOTAL NUMBER OF REFUSALS

NWTS has to measure the number of times they are unable to mount a team to transfer a child due to capacity.

Each referral is discussed with a NWTS consultant and the referring unit as to the appropriateness of the referral. If it is agreed that the child does need Paediatric Intensive Care, then a NWTS team will be mobilised; however if the team are already out, the following will be explored:

- Can the child be stabilised at the referring centre and wait for the NWTS team to become available.
- Can a second or sometimes third NWTS team be mobilised using the North West Ambulance Service as the means of transportation.
- Can a team be mobilised by one of the tertiary centres.

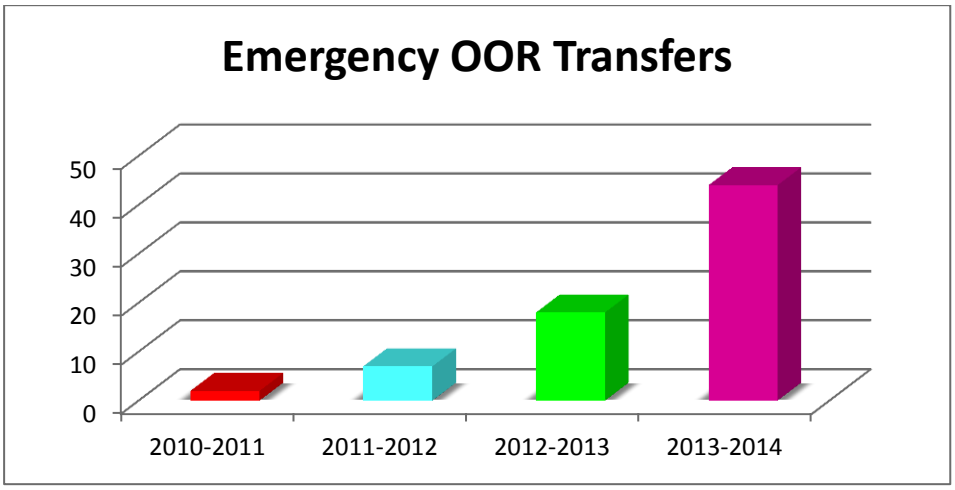
If this service isn't available and the child needs rapid transportation then the referring unit will need to transfer the child themselves. This is classed as a NWTS refusal. The referring team, however, will be given advice throughout the process as required.

NWTS refusals for April 2014 to March 2015 were 31.

This is a NWTS refusal rate of 4.4%, meaning that the NWTS Teams transferred 95.6% of children requiring Paediatric Intensive Care.

OUT-OF-REGION TRANSFERS

Prior to NWTS set up we were aware that up to 50-100 patients per annum were transferred out-of-region (OOR) due to lack of availability of PIC beds, often by a local DGH Team. This usually entailed multiple phone calls by the referring teams, and long delays before transfer. In 2014-2015 there were 44 OOR transfers due to lack of capacity in region. This is partly a reflection of the increasing numbers of PIC transfers required and is part of a national problem during periods of peak demand.



In order to minimize the impact on families for all emergency OOR transfers due to lack of PIC capacity in region NWTS always seek to find the closest appropriate PIC bed eg patients from Leighton or Macclesfield would be transferred by NWTS to PIC at North Staffordshire University Hospital. The majority of these transfers occur during peak demand (winter) when PIC bed pressure nationally is high. Unfortunately NWTS had to transfer one North West patient to Cardiff this winter.

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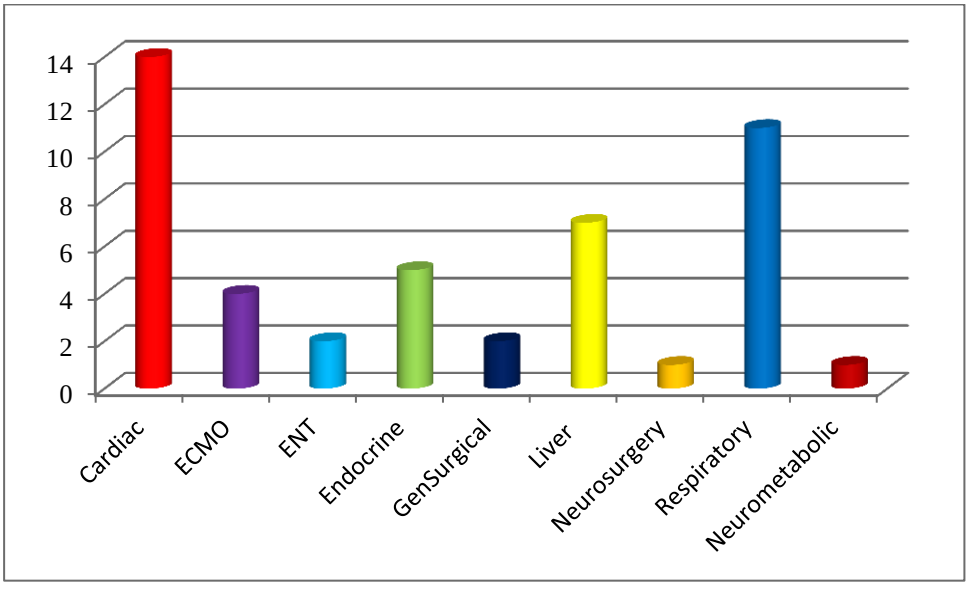
'ELECTIVE' OUT-OF-REGION TRANSFERS

Some patients require transfer out-of-region for quaternary treatment (eg cardiac, liver or lung transplant patients; tracheal or complex cardiac surgery; ECMO). Some are transferred out-of-region for a second opinion. This entails long-distance transfers, and is often done on a semi-elective basis. We aim to provide a second team specifically for these transfers to ensure that a NWTS Team is always available for any transfers within region. Destinations included Leeds and Birmingham for liver patients, London (Evelina and GOSH) for cardiac and tracheal surgical patients and Newcastle and Leicester for ECMO patients.

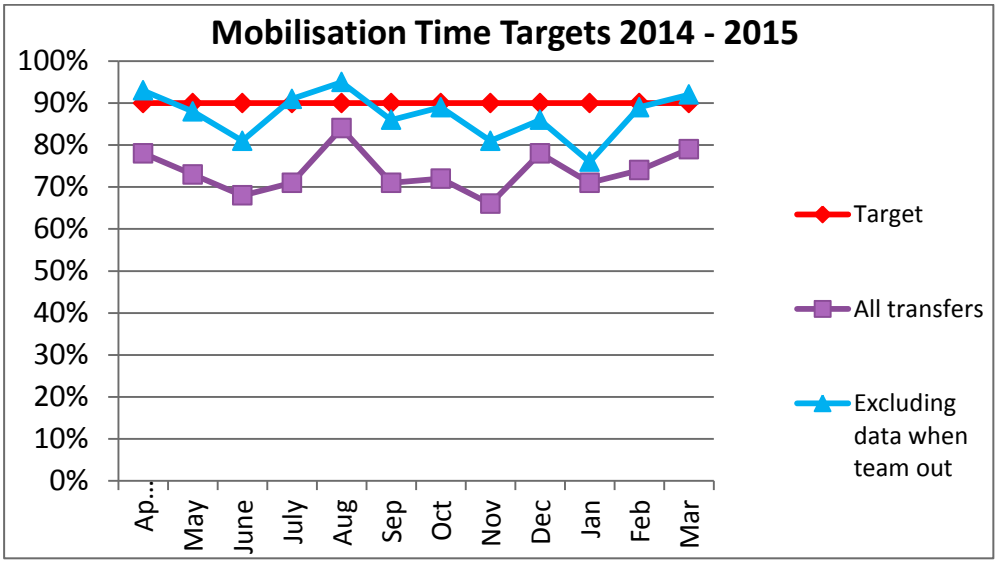
During 2014-2015, 41 patients were transferred out-of-region for specialist treatment not available locally and 6 patients were transferred by NWTS into region for specialist treatment (total 47 out of region transfers). During 2014-2015 the proportion of these patients transferred using flight transfer for at least one leg of the journey has increased. NWTS is working with The Children's Air Ambulance (TCAA), along with other transport teams in the UK, to provide helicopter transfers when appropriate. The TCAA is a charitable organisation and provides these flights for no cost to the NHS transport teams.



Out-of-Region transfers for specialist care 2014/15

MOBILISATION

NWTS provide advice on stabilisation whilst mobilising a team to a referring unit and aim to mobilise within 30 minutes of agreeing that a patient requires transfer to PIC (national UK agreed target). From April 2014 – March 2015 NWTS mobilised a team in under 30 mins 75.9% of the time. However, in 14.8% delayed mobilisation occurred as the team were already out on another transfer. If a 2nd team was mobilised delay may have occurred if team needed to utilise NWAS 999 ambulance if no 2nd NWTS ambulance driver available. Mobilisation times when the team are at base reveal that NWTS mobilise in under 30 mins 90.7% of the time. The median mobilisation time for 2014-2015 is 20 minutes.



Previously, teams from both PICUs in region were often delayed in mobilising as nursing, medical and ambulance teams had different shift patterns, and they all had responsibility for the care of other patients. Previously, both unit-based teams utilised the local 999 ambulance provider for all transfers, which often led to delay in mobilisation due to lack of availability of suitable vehicles. To improve NWTS ability to meet this target the whole team (nursing, medical and ambulance) is based on one site with aligned shifts and their only clinical responsibility is transport. NWTS has a dedicated ambulance team based with the team which has led to improved mobilisation times.

Regional transport teams are required to be at a patient's bedside within 3 hours of agreement of need for transfer to PIC (national target). Response Time (time from acceptance to patient bedside) in 2014-2015 was under 180 minutes for 90% NWTS transfers. Again, for 6.5% transfers delay occurred as the team were already out transferring another patient.

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TEAM MEMBERS

Teams mobilised vary in composition depending on the level of care an individual child needs and the ability of the transport lead on duty (who may be either medical or an Advanced Nurse Practitioner). Consultants are available 24/7 to join the team to improve the level of care delivered, reduce risk during transport for the patient and to provide education and training to members of the team. Medical trainees come from a variety of specialities eg Anaesthetics, Emergency Medicine and Paediatrics, including Paediatric Intensive Care medicine. An individual, who is competent to work on Paediatric Intensive Care or elsewhere, may struggle to deliver the same level of care whilst out on transport (in the ambulance, during a flight or in the referring hospital). In addition to clinical expertise, an individual needs good team-working and communication skills, flexibility and adaptability to cope with the demands of an individual patient, unfamiliar clinical environments, work with unfamiliar clinical teams, and multiple simultaneous referrals. Assessment of competencies during transport is made by a senior NWTS team member before an individual performs a transfer without direct senior supervision (nursing or medical). A National Paediatric Intensive Care Transport Competency Passport has been developed by the UK Paediatric Intensive Care Society (PICS) Acute Transport Group and ratified by PICS council and RCPCH. Two members of the NWTS senior team were on the working group that developed this document.

In addition to competency assessment, regional transport teams must provide annual training for their team members, and this includes scenario training in addition to workshops and lectures. Mortality and critical incident review, in addition to audit, are all part of on-going training and review of how well the team is performing, and inform the on-going development of the team.

Staff must be aware of the hazards of fatigue and it is important to have regular fluid and food during any shift to maintain concentration levels. NWTS drivers are encouraged to take a break, especially after longer journeys, before assisting the team preparing for transfer back to PICUs. Emergency snack-packs are carried by the team to use if they have been unable to take adequate meal breaks during a shift.

EQUIPMENT

Regional transport teams have access to dedicated equipment and kit including specific ventilators, monitors and infusion pumps that can cope with variety of sizes of paediatric patient (ie from neonate to 16 years) and are robust with sufficient battery life to cope with transport without requiring recharging. Part of induction and on-going training at NWTS includes equipment to enhance familiarity with its operation. At each shift the equipment is checked to ensure that it is fit to be used for a transfer, and any faults are referred to the Biomedical Department.

NWTS use checklists to ensure that the team makes adequate preparation for each transfer. This includes one to ensure that appropriate equipment is taken from base to the referring unit, in addition to a pre-departure ABC-based checklist prior to transferring a patient to the receiving PICU. For all patient journeys equipment is packed and easily available to address events which occur infrequently, eg re-intubation kit. In addition, most children may require a bolus of fluid or drugs during their transfer, so these are prepared before transfer and kept close to hand.

Infants and children must be secured safely to the transport stretcher before departure. NWTS use the BabyPOD™ for those under 5 kg and an appropriate 5-point harness for older children eg ACR harness (Paraid) or similar. To improve ability to maintain temperature NWTS use either transwarmers (chemically activated warming device) or Inditherm™ as active heating devices, especially for those under 1 year old. All equipment must be safely secured to the ambulance trolley during transfer to prevent danger of injury to patient or staff during the journey.

NWTS use a dedicated ambulance. The ambulance has been adapted for purpose, with provision of both piped air and oxygen, and use of cupboards for additional equipment. This provides NWTS with the ability to do back-to-back transfers without the need to return to base, reducing any delays which may otherwise occur, especially at times of peak demand.

During transfer, for safety the team and parent(s) must wear seatbelts. The trolley fixation has been moved more centrally to allow a member of the team to be able to reach to adjust either pumps or ventilation without removing their seatbelt. If any other patient intervention is required, the ambulance pulls over to allow the team to stabilise the child before transfer continues.

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EDUCATION & TRAINING

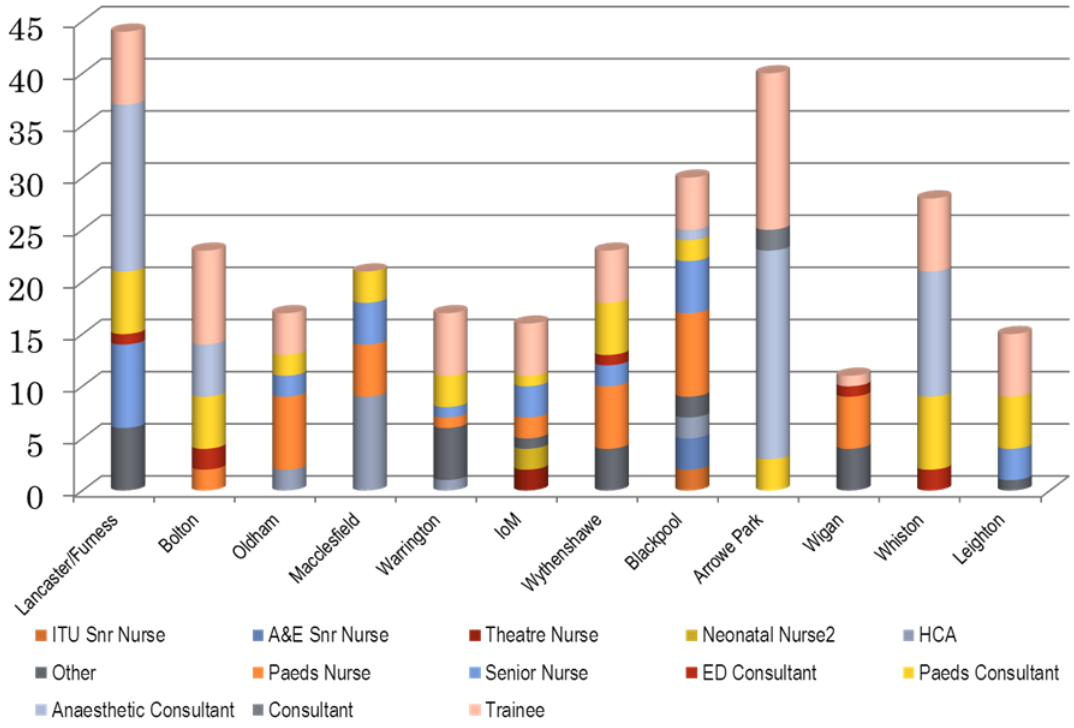
The NWTS Team is commissioned to provide support, education and training for the local referring teams who may, at times, face the challenges of the management of a critically ill or injured child. Over the past 4 years, senior members of the NWTS team have travelled out to each hospital trust (29 in total) within the region to provide an agreed programme of education. The aim is to provide a once-a-year session to each hospital with a key objective to attract all teams that may be called to assess and deliver acute care to critically sick children.

- **19 Centres NWTS Provided Outreach**
- **4 Debriefs**
- **1 Regional Conference: Cardiac Focus**
- **1 Consultant Day –Anaes/Paed/Emerg med**
- **4 Link Nurse Days**
- **Ad-hoc Training Days (UCLAN/HDU/ Theatre Teams etc)**

NWTS utilise a variety of teaching methods, not just the traditional lecture format. A typical DGH outreach session:

- NWTS consultant presentation
- Case Discussions led by the local team (in which there had been NWTS involvement, either providing advice and/or transferring the child into a tertiary centre)
- Attendees rotate around 3 workstations in small groups: airway/intubation tips, intraosseous needle use/insertion, intravenous infusion updates.

The team provided 5 Paediatric Critical Care Update Days with CPD approval (RCPCH) at NWTS base. Each date consisted of 5 consultant-led presentations which covered: The Sick Neonate, Sepsis, Respiratory Failure, Airway Management, and Lessons Learnt.



The team also provided a Consultant Day for Paediatricians, ED and Anaesthetists. This day delivered 4 practical sessions in the morning (Tracheostomy Care, Airway Tips, Airway Clearance and Chest Drain Insertion); the afternoon included a series of short case presentations and Lessons Learnt.

Link Nurse Days are run twice a year – 2 in the spring and 2 in the autumn. These sessions include Feedback, Case Discussions and Practical Demonstrations, including Optiflow and SiPAP. These sessions ran from 10.30 am to 3 pm. They are aimed at Nurses and Advance Nurse Practitioners working in Paediatric Wards / Emergency Departments / Theatres / Adult ICUs.

NWTS team members are part of the team organising and facilitating the monthly regional PICM teaching with colleagues from both AHCH and RMCH. Senior team members also present at a variety of regional and national meetings and conferences on paediatric transport, airway management, vascular access, and on paediatric simulation courses. Senior team members were part of faculty on the first Paediatric BASIC course in the UK which was held in Manchester in November 2014. The BASIC (basic assessment and support in intensive care) course teaches the foundations of the resuscitation, stabilisation and clinical management of critically ill children. It is suitable for all doctors, advanced nurse practitioners and senior nurses responsible for resuscitating and stabilising acutely unwell children; going beyond the standard resuscitation courses, and following the success of the first course will continue to be run regularly in Manchester, London and further afield.

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FEEDBACK – EDUCATION

- *Fantastic day – very interesting, especially the 'top tips' talk*
- *Excellent day – good refresher and not too long*
- *Difficult to improve*
- *Very supportive and positive vibes about working together with DGH doctors*
- *Very interesting and thorough. Very interactive. Very broad teaching.*
- *Very worthwhile course, really enjoyed it.*

NETWORKS & GUIDELINES

NWTS are part of the Paediatric Critical Care Operational Delivery Network in region, and work with clinicians from both referring units and specialist tertiary centres to develop regional guidelines to help inform the care of the critically ill or injured child.

The Status Epilepticus guideline was one of the first to be developed by paediatric critical care network (PCCODN). NWTS utilised education sessions to highlight the benefits of extubation by the DGH team without transfer to PIC as an audit revealed that the vast majority of children transferred to PIC were extubated within 6 hours of arrival. Subsequent NWTS audits have demonstrated an increase in extubation by DGH teams from 19% in 2010-2011, 38.7% in 2011-2012 to 52% in 2013 with no adverse events. This has only been achieved with the support of both anaesthetic and paediatric teams in region and has benefited many children and families.

Other paediatric networks in region eg Childrens' Major Trauma and Cardiac networks have representation from different members of the senior NWTS team to work together to improve the care of critically ill or injured child.

NWTS senior team members were part of the working party for the paediatric national tracheostomy safety project led by Dr Cath Doherty consultant anaesthetist at RMCH. This group has developed an emergency algorithm and teaching resources which can be found at www.tracheostomy.org.uk. Senior team members have also been part of the working party developing the paediatric critical care transport competency passport for the Paediatric Intensive Care Society Acute Transport Group which has been approved by both PICS council and the RCPCH Paediatric Intensive Care Medicine CESAC.

NWTS are part of the national paediatric and neonatal critical care flight transfer group. Over the last 12-18 months NWTS have worked alongside other regional transport teams with The Children's Air Ambulance (TCAA) to develop a sled system to be used for helicopter flight transfers. The introduction of this sled systems has meant that journey times e.g. to London have been dramatically reduced for the benefit of the patients involved. In October 2014 a NWTS team were involved with the 100th TCAA flight transfer.

GUIDELINES

These guidelines have been developed with close collaboration between NWTS, specialists at the two tertiary paediatric centers and colleagues working in district general hospitals across the North West of England and North Wales via the regional paediatric critical care operational delivery network.

- Acute Paediatric Intubation – May 2015
- Management of Infant or Neonate with Hyperammonaemia – March 2014
- Management of Acute Severe Asthma in Children – June 2013
- NWTS Transport Document – June 2012
- Major Trauma Centre Guidelines – September 2012
- Moderate to Severe Bronchiolitis – November 2012
- Moderate to Severe Bronchiolitis – Summary Sheet – November 2012
- Convulsive Status Epilepticus – November 2011
- Neurosurgical Time Critical Transfers, Joint statement of British Society of Neurosurgeons, Royal College of Anaesthetists and Paediatric Intensive Care Society – Joint Statement 2010

All guidelines are available on our website: **www.nwts.nhs.uk/clinicalguidelines**

PARENTS

Paediatric Intensive Care Society (UK) Standards 2010 state "wherever possible and appropriate, parents should be given the option to accompany their child during the transfer". Parental stress is increased by not being able to travel with their child (1).

Pre- NWTS, unit-based PIC transport teams were unable to take parents due to restricted number of seats when using the local NHS front-line ambulance provider. NWTS' Service Level Agreement with the private ambulance provider states that the ambulance must have four seats to ensure a minimum of one parent can travel with their child. Now, 53% of NWTS transfers have one parent and 9% of transfers have both parents travelling with the team. Approximately 19% of parents decline, opting instead to travel separately, with 18% in their own car and 1% utilising taxi, train or plane. NWTS refused to take a parent in 0.4% of transfers due to safeguarding issues.

NWTS recognise the positive benefits of parent(s) travelling in the ambulance, especially if their child is very unstable and may not survive the journey. The NWTS team has been able to appropriately manage any necessary patient interventions during transfer with parents present. Parental feedback has been very positive – 'NWTS not only kept our daughter alive, but kept our family together at a very difficult time - thank you.'

REFERENCES

1) **"The worst journey of our lives": parents' experiences of a specialised paediatric transport service. Intensive Critical Care Nurse 2003 19(2):103-8 Colville G et al**

WINTER PRESSURES FUNDING

Winter pressure funding is allocated annually via NHS England. NWTS bid for additional funding to increase the team's ability to provide transfers for critically sick children in region during peak demand. During the past winter NWTS utilised winter pressures funding in 2 main areas:

1. The current NWTS budget allows for an additional PICU transport team for 3 months during the winter (Nov – Feb). This equates to a full NWTS team working 12MD till 12MN Monday to Friday only. NWTS have seen a year on year increase in referrals and transfers and therefore utilised the winter pressures money to extend this service from October 2014 to end March 2015 and to 7 days a week to help meet this demand.

2. During 2014-2015 44 children required transfer to an out of region PIC bed due to lack of regional PIC bed capacity. The additional 12-12 team enabled NWTS to transfer such patients safely (reduced risk of NWTS team working beyond usual shift hours). Without the additional 12-12 team NWTS would have struggled to meet quality performance indicators eg target for NWTS team mobilisation times and NWTS refusals during times of peak demand.

3. NWTS transfer critically sick children into a tertiary PICU from their local DGH which may be many miles from home. Winter pressure funding provided a PIC Transport Nurse led repatriation service 7 days a week including onsite ambulance provision from Medical Services. This service transferred recovering children back to their local DGH to complete their treatment closer to home. It enabled the team to free up PICU and HDU beds within the tertiary centres. It also relieves pressure on the demand for front line ambulances that would otherwise be requested to provide transport.
   Total Number of Repatriation's winter 2014-2015 = 159

PARENTS FEEDBACK

The repatriation team asked for anonymous feedback from these families who may well have met the NWTS team at 2 points during their child's serious illness. These results have been audited and below are some of the free text comments parents have made.

- *'Well organised, caring, professional, calm'*
- *'A really excellent service & lovely team – thank you'*
- *'They were amazing; felt reassured my daughter was in such expert hands'*
- *'Exemplary level of care provided by RP and team caring for my daughter. We are eternally grateful. Thank you'*
- *'We experienced the NWTS PICU team twice, once at Preston and then at Leeds, and then the repatriation service on return to the local hospital. Both teams were absolutely fantastic.'*
- *'NWTS is essential for children like ours with complex needs & do not have access to local PICU – a lifesaving service for our son'*

AUDIT AND RESEARCH

Professor Ralph MacKinnon has presented both nationally and internationally on the development of tools and frameworks to improve the interactions of paediatric trauma/critical care teams.

Dr Kate Parkins has raised awareness in the UK of the risks of button battery ingestion (see information below) with appearances on North West News (BBC) and The One Show, and articles in the national press. In addition the risks have been highlighted to national children's safety charities that now provide practical information for parents on their websites. A national alert was released from NHS England in December 2014.

Audit projects undertaken during 2014-2015 have continued to be successfully submitted as abstracts to a various national and international conferences. The following are examples of the work presented.

ESPNIC Istanbul 2014

- **'How good are your notes?'** – highlighted gaps in documentation and has led to revision of NWTS documentation
- **'Surviving Sepsis – beyond NICU'** revealed a variety of causes of sepsis in addition to group B Streptococcus, including Herpes Simplex, Enterovirus and Pertussis.
- **Asthma audit:** regional guidelines have increased confidence in use of intravenous bronchodilators including magnesium sulphate.

CEM conference 2014: 'Guilty as charged: be mindful of the 'negative' effects of Lithium button batteries' – won the poster prize

- Lithium button batteries are found in toys, key fobs etc
- **Age** group most **at risk = under 6 years**
- **LBB greater than 20 mm** most likely to get lodged in the oesophagus – ie site with highest risk of potential harm
- Symptoms may be subtle or absent initially; only 60-80% ingestions are witnessed
- If patient may have LBB ingestion **x-ray: neck, chest & abdomen** including an AP & lateral film to locate position
- Remove ASAP under direct vision (endoscopically) and check for mucosal damage
- **Catastrophic haemorrhage/exsanguination** may occur **up to 28 days post ingestion** (despite removal) and oesophageal strictures may take months to develop
- **TIME IS TISSUE**: act fast to remove LBB to reduce risk of damage

PICS, Newcastle 2014

- **'Mind the gap: the role of regional transport teams in management of severe diabetic ketoacidosis'**
    - Majority severe DKA patients are managed locally on HDU
    - Transport teams use their own guidelines to 'bridge the gap' between BSPED guidelines & potential PICU patient.
    - Gap in BSPED guidelines flagged to national review team
- **'Management of endotracheal intubation in critically ill children in DGH setting'**
    - Main primary intubators in DGH are anaesthetists, but NWTS are primary intubators in a significant number.
    - NWTS intubations are therefore delayed with no clear reason in many cases.
    - Drugs used to intubate vary; predominant agent(s) has changed to ketamine +/- fentanyl.
    - Complications more likely to be noted when patients intubated by NWTS, likely to correspond to severity of cases managed, & time delay as NWTS not on site.
- **'Tip of the iceberg: poisoning referrals to a regional transport team':** highlighted the increase in rates of accidental and non-accidental ingestions leading to admission to PIC
- **'Critical Medicines in Referring Hospitals: are we ready?'**
    - Majority medicines are readily available, audit revealed difficulties in sourcing some essential medicines
    - Regional alert has been sent out highlighting importance of maintaining a stock of those medicines used to stabilise an infant or child with hyperammonaemia (see regional guideline)

RCPCH Welsh meeting 2014: 'Anticipating the difficult airway – a Paediatric Intensive Care perspective'

A case series highlighting importance of recognition and appropriate management of difficult airway, and to highlight the release of new regional paediatric intubation and difficult airway guidelines:

- Guideline describes alternative plans to ensure better patient outcomes
- Equipment and monitoring (including end-tidal CO_2) to be standardised across all departments including difficult airway equipment
- Emphasised the importance of collaboration of paediatricians +/- neonatologists, anaesthetists and ENT surgeons in management of difficult airway
- Education, update and regular practice in airway management also reduces the risk of paediatric airway difficulties

NWTS CHARITABLE DONATIONS

NWTS have been fortunate as a service to receive substantial donations.

The service has been supported by a core group of families, endlessly fundraising to help provide vital pieces of equipment. In September NWTS hosted a 'Thank You' evening for families involved in fundraising.

In 2014-2015 fundraisers have provided funding for:

Hamilton Ventilator

CMAC laryngoscope

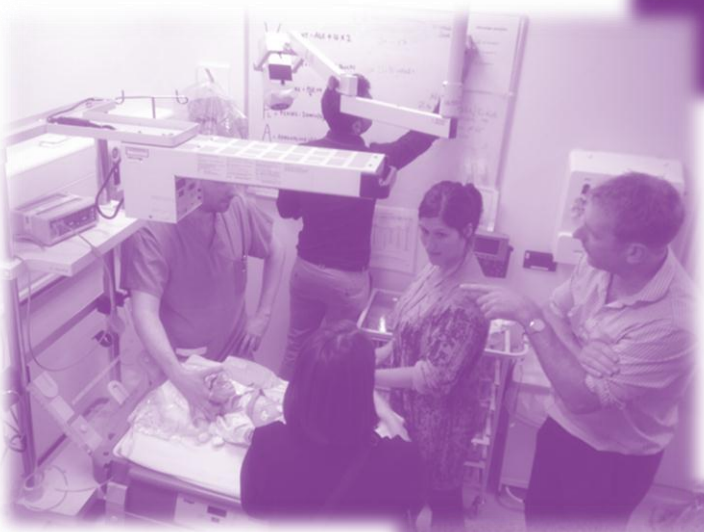
We would like to take this opportunity to thank all the families involved in this fundraising.

If you would like to help you can discuss any donation or fundraising efforts you would like to plan with the NWTS Team, on the following number:

01925-853550

Or, you can also contact the Trust's fund raising department by:

Phone: 0161-276-4522
Email: charity.office@cmft.nhs.uk



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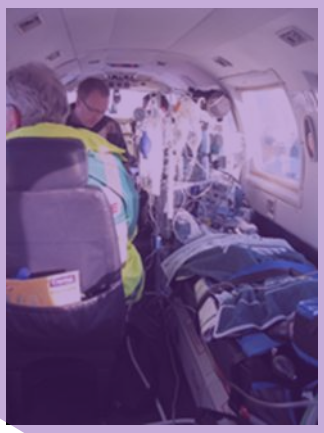

CONSULTANT REFERRAL LINE

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