Welcome to the 2016 Annual report for the Acute Neonatal Transfer Team. It has been another busy and exciting year for the team with 2 particular highlights, one being the arrival of 3 new purpose built ambulances in May 2016 designed by the team specifically to meet the needs of our neonatal population along with the purchase of new equipment including state of the art monitors and new nitric oxide delivery systems. The second was the appointment of Sarah Rattigan as the ANTS service manager. This is a critical post for the service both in supporting the delivery of high quality day to day service activity but also in looking towards strategic developments and planning for the future. Sarah is well known to many of you across the region and brings with her a wealth of experience and knowledge of both the ANTS team and the wider network which is already having a very positive impact.

We remain one of the busier Neonatal transfer teams in the UK, as was highlighted in the 2016 National benchmarking data set, completing 1285 transfers, the benchmarking data also indicated that we consistently deliver high quality care to the babies and their families across the East of England. We continue to develop the service to provide the best care we can, for example the early introduction of high flow nasal cannula into the transport setting which we have published and presented on at a range of national and international meetings in 2016. In addition to this work we have presented on a variety of topics as diverse as palliative care in transfer and the use of nitric oxide in preterm infants at the largest International Transport meeting “2nd Edition of Transport of High Risk neonates” with over 200 delegates and representatives from over 30 countries.

However, like many services there are areas that we know we would like to improve on, it remains a challenge to meet the KPI’s related to dispatch and arrival times except when the team are at base. The geography of the region and the proportion of babies that we have a responsibility for in London to be moved back into the East of England has a very significant impact on the teams responsiveness. To that end we have recently changed the teams working patterns to try and match that against referral and activity data. The team now works 3 staggered shifts, 08:00-20:30, 10:00-22:30 and 21:00-09:30. We have seen some immediate improvement in shift overruns and an improvement in KPI’s in response to this.

As the lead for ANTS I would like to say on behalf of the whole team, it remains a privilege to do what we do and I hope that the family stories in the annual report inspire you as much as they inspire us on a daily basis.

I look forward to working with you all as we continue to develop our service over the coming months and years.

Dr Sue Broster - Clinical Lead

Welcome to the 2016 Acute Neonatal Transfer Service (ANTS) annual report. ANTS continue to provide a transfer service for all of the babies from the 17 neonatal units, both for very sick or premature emergencies requiring escalation of care and for those babies who are improving and progressing to be nearer to home.

After 10 years in the network I moved on to the neonatal transfer team (ANTS) as the clinical manager. Having been there at the start of the transport team set up and previously managed the service; it was a privilege to return once again. I was part of the team which used to work out of the Cambridge neonatal unit to do transfers as required as well as having my own intensive care workload. Once a call came in it was a quick handover of my own unit babies, the unit registrar would hand over the unit to a colleague and we would wait for the front line 999 ambulance to come. Then off we would go to wherever we were needed. Whilst the clinical care was excellent the operational and logistical challenges were many and it was such a huge step forward for the east of England patients, families and the staff and to have a dedicated transfer team.

Our ANTS parents have a high profile for the annual report. They were invited to send their stories about transport and they have responded very positively, and I am grateful for their input. I hope that these stories will help you to appreciate what the families go through. But also how everyone in the ANTS team plays such a memorable part in the lives of the patients and their families. As one team with nurses, doctors, administrative staff and drivers, everyone makes a difference.

Thank you to everyone for such a warm welcome back. So much progress but still so much potential.

Sarah Rattigan - ANTS Clinical Manager (from November 2016)
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Teams &amp; Service</td>
<td>7</td>
</tr>
<tr>
<td>Data</td>
<td>29</td>
</tr>
<tr>
<td>Parent Stories</td>
<td>11</td>
</tr>
<tr>
<td>Daisy</td>
<td>12</td>
</tr>
<tr>
<td>Alec</td>
<td>14</td>
</tr>
<tr>
<td>Frankie</td>
<td>15</td>
</tr>
<tr>
<td>David</td>
<td>16</td>
</tr>
<tr>
<td>Henry</td>
<td>18</td>
</tr>
<tr>
<td>Sylvie</td>
<td>20</td>
</tr>
<tr>
<td>Staff Experience</td>
<td>23</td>
</tr>
<tr>
<td>EBS</td>
<td>24</td>
</tr>
<tr>
<td>St John Ambulance</td>
<td>26</td>
</tr>
<tr>
<td>Risky Business</td>
<td>39</td>
</tr>
<tr>
<td>Education &amp; Publications</td>
<td>47</td>
</tr>
<tr>
<td>ANTS Social</td>
<td>55</td>
</tr>
<tr>
<td>The Future</td>
<td>59</td>
</tr>
</tbody>
</table>
We are a dedicated, expert team delivering high quality first class neonatal care to babies and families. The team consists of drivers from St John Ambulance, specialist neonatal nurses, senior medical trainees, senior clinical fellows, consultants, administrator and manager. This team offers a unique opportunity to develop expertise, confidence and understanding in neonatal transport and its organisation for all staff in the team.

The Acute Neonatal Transfer Service for the East of England (ANTS) was established in April 2003 and 13 years on it remains one of the busiest neonatal transfer services in the UK, undertaking approximately 1300 transfers per year. The team works closely with other teams to move the right baby to the right hospital at the right time.

The service provides 24 hours a day, 7 days a week, 366 days a year (due to 2016 being a leap year!). We are responsible for arranging and ensuring safe transfer of any baby who resides in the East of England Operational Delivery Network (ODN) catchment area. ANTS cover a vast regional area of 7500 miles\(^2\) which is 10% of the UK land mass and regularly transfers babies in and out of London for specialist treatment. Additionally we occasionally perform more remote transfers to other regions of the UK.

There are 3 clinical teams and the times for operation changed during 2016. The driver, nurse and medic make a single specialist team to cover:

- **DAY 1 0800-2030**
- **DAY 2 1000-2230**
- **Night 2100-0930**

EBS has a 2 shift rota pattern. EBS coordinators provide an emergency cot location service and support the administration for in-utero and ex-utero transfers for the region. If a specific cot is required by a referring hospital that isn't available in the region then the EBS Co-ordinators will locate a cot outside our region which is as close to the family home as possible. They liaise twice daily with London EBS for neonatal cot availability in London.

- **0800-2000**
- **2000-0800**

Consultant cover is available 24 hours a day. Administrator and management cover is generally during office hours Monday – Friday.
It is no surprise that having a baby is a pretty traumatic experience. After seven failed pregnancies we found ourselves 20 weeks in being told that the placenta wasn’t working properly and that the baby had cut the flow of nutrients to its limbs in order to prioritise the essential organs and the brain. At 23 weeks the body was starting slow in terms of growth and it became a race between the placenta failing completely and the baby reaching the magic figures of 24 weeks and 500g. 24, 25 and 26 weeks passed and we were finally told that the baby had passed the size mark….and that it needed monitoring every two days….in London.

About 2 days in there was a bit less movement from somebody who had previously been a pretty active kicker so we popped down to St Mary’s Hospital, Paddington the evening before a monitoring session was due and they strapped on the machine. An hour later and some frantic phoning of the on-call consultant the registrar told us that it was time to get the baby out into the world. The next part of the story was a bit surreal but ended with a little squawk in an operating theatre at 2am and a 680g, 27 week Daisy appeared in a ziplock bag wearing a woolly hat. There seemed to be a lot of people around and Daisy was being rushed around the hospital and up to the Winnacott which is the St Mary’s Neonatal Intensive Care Unit (NICU).

After about 2 weeks, we were told that the little pink alien we were calling Daisy was safe to travel back to Cambridge. It is true to say that she was looking healthier than she had at birth but she was still less than two pounds in weight and had more tubes and wires attached to her than most underground stations. Still, we were happy to be heading home, except it was going to be a bit trickier than that. It seemed that we had to get both an ANTS ambulance and a free bed in the Rosie NICU lined up at the same time if we were going to be able to make the trip. There were a couple of false dawns when we turned up at St Mary’s with a bag all packed only to sit around because an emergency birth had taken place in what is quite a large area called East Anglia. On the plus side at least we were somewhere safe. When the ambulance did turn up it took us slightly by surprise. We were given about an hour’s warning that this time we were moving. Of course this was the day when we didn’t bring a bag in with us so I dashed back to the flat we had been staying in to get our stuff together. I got back to the hospital at roughly the same time as the ANTS team. It was a team of four including the driver who turned up with an enormous mobile incubator that most closely resembled the re-entry capsule from an Apollo mission with little portholes in it. This combination made the rather cramped St Mary’s NICU seem even more of a squeeze. It was clear from the start that the registrar and the nurse had everything under control. Before we knew it Daisy was all wrapped up, plugged in, strapped in and rolling.

By the time we got to the Rosie, Daisy was all unpacked, unwrapped plugged into the hospital machines and the ANTS team had left to go and transfer another baby from within the Region.
Our long five month journey in NICU started by meeting ANTS. When Alec made a surprise arrival at 23 weeks I'm not sure that much of what was happening was making sense, but we remember speaking to the ANTS team who were busy working on our tiny boy in a very complicated looking glass box. The doctor who was working on Alec made some comments that gave us hope way beyond the short trip down the A1. This was not the way that we expected our son's first trip on a road to go, blue lights first thing in the morning in rush hour traffic.

Being able to transfer Alec to Addenbrooke's undoubtedly saved his life. Throughout the coming five months he experienced a number of difficult challenges to overcome. He spent most of the first six weeks on a ventilator fighting hard to get off. At points he was extremely poorly fighting infections, making steps forward but also some significant backward steps. He was rushed for urgent surgery on his bowel after it perforated (whilst weighing little more than the 714g he was born weighing) and had 3 more surgical procedures and a total of 27 blood transfusions before he was able to come home. All of the time we were hoping for our return ride in an ambulance but at points it looked extremely unlikely. The ride of NICU is much more of a rollercoaster. There were many lows, many surprises and changes along the way. There were also some moments of highs: mummy's first cuddle at 6 weeks old, and daddy's two days later, his big brother learning to care for him and watching him grow in the incubator.

We did get a ride back in an ambulance, the day after Alec's due date, which was special – almost felt like he was just a day late turning up at Peterborough Hospital, rather than the four months early. He now weighed 6lb 7ozs and had come so far. We had a couple more trips to and from Addenbrooke's over the next six weeks for surgery and our final return to Peterborough.

Before this we'd never seen a white ambulance but we have never been more grateful for their existence!

Frankie was born on 16th April at the Queen Elizabeth hospital in Kings Lynn. From birth he was suffering with seizures and was diagnosed with HIE. He needed cooling treatment which couldn’t be done at Kings Lynn, so needed to be transferred to one of the larger NICU units. Norwich and Addenbrookes were both full, so ANTS were called to transfer him to Luton & Dunstable. Because of the amazing incubators they have, they were able to begin his cooling at Kings Lynn and on route, rather than having to wait until he reached Luton.

It took a few hours to get him sedated and loaded up, with his dad able to travel with him. Meanwhile I was transferred in a separate ambulance, so we were all together in Luton within about 8hrs of Frank’s birth. He was treated amazingly at Luton, and about 10 days later was doing so well he was able to be transferred back to NICU at Kings Lynn. We had a bit of a false start where an ANTS team arrived late one night to transfer him, but were called away to a more urgent case just before Frankie was loaded. We were happy to wait, as the other little one was in a critical state and much more important! Only 10 days before we’d been in the same position so were so glad the team were able to help that other little one!

Thank you to all the staff at ANTS; such an amazing service, and absolutely without a doubt they helped save our little boy from a much worse diagnosis.
My son David was born on the 1st February 2016. Shortly after birth he started to have a series of seizures and with no apparent cause for them it was decided he would have to be sent over to the Rosie Hospital in Cambridge.

The ANTS team arrived in the SCBU at Colchester Hospital to get David all set up in the special incubator. As soon as my husband and I entered the ward we were greeted by smiling and understanding faces of not only the nurses and Doctor but also the ambulance driver.

I was so emotional and all 4 of them were so understanding. They told us exactly how they had prepared David for the journey, what things they would be looking out for during the transfer and how they would settle him in over in Cambridge. It was so comforting to see them take such care with this precious newborn they had never met before.

The doctor explained everything again to my mother in law when she arrived to see David off, which was just so lovely of her to do. She made sure everyone knew what was happening to keep us at ease. One of the nurses told us exactly where to go when we would get to the Rosie the next day, a direct telephone number and the name of the nurse who would look after David. She also said she would see us there Friday as she would be working on the same ward, but hoped that wouldn’t be the case and he’d be back home with us. They covered over the incubator with a blanket, and set off, all the while reassuring us.

After 4 days in NICU it was discovered David had suffered a stroke at birth and he was making good progress so no longer needed the care from the amazing nurses at Addenbrookes. So once again people arrived in their dark blue scrubs and the scary incubator on wheels, but this time it wasn’t so scary. I remembered how nice the first team were and expected no less from this team. This time there were only two instead of 4 and yet again I was greeted by warm friendly faces. They went through everything with me again and when we got down to the ambulance was greeted by a different driver, who was just as lovely and friendly.

They stayed with us once we’d got back into the ward at Colchester and made sure David was settled and sorted.

I cannot praise both ANTS teams enough for the care and professionalism they displayed in such a scary time for us as new parents. We are so grateful for their patience, time and devotion as without them we wouldn’t have been able to receive the care David needed so urgently. They really made us feel at ease and comfortable in leaving our child in their care.
After an emergency C section, our tiny 4lb 9oz baby was intubated and given antibiotics. Early the next morning, Henry was just over 12 hours old when he was ventilated and we were given the devastating news that he needed an intensive care unit in a level 3 hospital and the acute neonatal transport service (ANTS) were on their way.

The anxiety was instant; we’d never been so scared in our whole lives.

When the ANTS team arrived they were so reassuring. To us it was a whole new frightening world that we never even knew existed. I remember the nurse giving me a hug and insisting Henry was in good hands and she promised me she would look after him and that as soon as they arrived, she would call and let us know how things were, and that’s exactly what she did.

Henry went from Colchester to Luton and within a few days he was ready to come back to Colchester again. We waited while the team handed over and then watched them move Henry over to the transport incubator; during this time the ANTS nurse even let me sneak a quick kiss on his head beforehand. I’m sure she was aware it was my first bit of close contact with my boy since birth and it was the best feeling. We followed shortly behind and were called as soon as they had arrived.

Within a couple of days of returning to our local hospital, the doctors realised Henry was a very complex baby and needed the specialist’s at Addenbrookes to look after him. So again, Henry was intubated for the journey and ANTS come to pick him up. It was the same doctor as the first time Henry was moved which reassured us straight away.

When Henry arrived at Addenbrookes and the team had done their handover, they gave me a call to say the transport went well with no complications and Henry was comfortable. ANTS were always happy to discuss any concerns we had and passed over any information we needed to get to Henry quicker, very caring but always very professional too.

Henry spent 10 long weeks in Addenbrookes before he was finally allowed to return back to Colchester, which should have been the last time. By this time ANTS had become quite familiar with Henry and his complexities, we had become quite familiar with the amazing team too. We had our complete faith and trust in them, that we were happy to rush off first to be back in time to meet Henry when he followed later.

Every time ANTS transported our precious boy, they did it with the most dignity and care. Although the babies are the team’s main priority, they also do an incredible job consoling us parents, when we had/have to hand over a piece of our heart for them to look after.

The lives of the babies are solely in their hands and to transport them in such conditions must be at times extremely challenging but also very rewarding too and for that we admire ANTS and their drivers.

As well as ANTS doing an amazing job, their St John ambulance drivers are very much remarkable people too. The first time Henry was being prepared for transport; the driver joined us in the waiting room and reassured us about ANTS and their role within neonatal care. The drivers were also happy to discuss the best route of travel and kept us aware of any incidents on the roads each time.

We’ll be forever grateful for the amazing work the whole team do.
ANTS transferred our daughter Sylvie between West Suffolk Hospital and The Royal Brompton Hospital when she was 12 hours old. (31/07/2016). The Paediatric team at WSH feared she had coarctation of the aorta and would need immediate lifesaving surgery.

I was sat with her when the ANTS team arrived, I was frightened I’d never see her alive again, but I knew that she couldn’t be in better hands. The team let me stay while they did hand over, then they packaged her up in the incubator and whisked her away.

Her Daddy followed in the car, when he arrived at The Brompton she was already admitted and being scanned. Thankfully, her symptoms were not due to a heart condition and she made a full recovery in a couple of weeks.

We will always be thankful to ANTS for the part they played in the care of Sylvie.
No 2 days are ever the same for us in the Emergency Bed Service (EBS).

We are a 24 hour service based with the ANTS team at the Rosie Hospital in Cambridge. 1 EBS coordinator is on shift at a time and our shifts are 12 hours long.

Our day starts at 08:00 when we have handover and see what jobs we have on the board.

We do a daily ring round twice a day to all 17 hospitals in the East of England Network to see what the daily cot status is and if there are any referrals that might come our way.

Next we swap Cot status with EBS in London and that tells us the status of the London Hospitals as well.

We are the first point of contact for the ANTS Team.

We take basic demographic and clinical information for any babies that may need to be transferred this can be for either Elective or Emergency transfer, and after each transfer we collate all of the information and add it to our database so that we have a record of each job that we do for reports and audit purposes.

We have a computer programme called Navman that we use to track the vehicles and plan routes and transfers.

Another of our jobs is to locate cots and beds for all in-utero transfers that may be needed. If any mothers need to be transferred for any reason such as mothers themselves or their baby needing a higher level of care or because there are no beds in their booked hospital we find both a NICU bed and a DU bed for mum. Sometimes when there are no beds in region or in London this can be a real challenge and we have sent mums as far afield as Doncaster, Portsmouth and Cornwall and as you can imagine this can take hours!!!!

And after the 20:00 it all starts again, so all in all as you can see we are a busy team.

Unlike some transport teams we are fortunate enough to share a large office with our clinicians, drivers and at times consultants. This makes our work more interesting and educational, because we are able to learn about the range of problems specific to neonates. Clinicians are always happy to explain, drivers have the knowledge and experience to be realistic about journeys times while the nurses ensure equipment and medications are ready. So we are all able to appreciate the input that we each make as a team.
ANTS drivers and vehicles have been provided by St John Ambulance since 2015. The specialised role of driver is an essential component of the team dynamic for each and every successful transfer. Highly skilled in ambulance response driving, on any emergency transfer they are responsible for transporting both quickly and safely a very delicate preterm or sick baby, those providing baby's clinical care namely the ANTS registrar and ANTS nurse plus also a potentially anxious mother or father - this is an important job! Preterm babies in particular are susceptible to sudden movements and the effects of g-force on their delicate organs so the ANTS driver has to balance the needs of making progress against the importance of a smooth drive. Not an easy task on our sometimes winding UK roads with countless roundabouts, potholes and sunken drain covers amongst a myriad other obstacles to gentle progress! Consequently, good route planning forms an important part of the role too and the experienced ANTS drivers have built up an intimate knowledge of the preferred routes around the East of England plus in and out of London as of course many specialist neonatal units are located in our capital. Working closely with their colleagues on the ANTS team, each driver is responsible for ensuring all necessary kit is present and correct as well as maintaining high standards of cleanliness on their vehicle for effective infection prevention control.

In the summer of 2016, almost exactly a year since St John Ambulance first started transport provision for ANTS, our eagerly-awaited new vehicles arrived. Three Mercedes-Benz Sprinter ambulance conversions with final assembly completed by WAS of Wietmarschen in Germany. With powerful 3.0 V6 diesel engines and 7-speed automatic transmissions, each is designed and adapted specifically for neonatal transfers. Representing a considerable investment of around £200,000 each, they feature full climate control, self-closing door mechanisms, air suspension for a smoother ride and even a cooler for baby's milk! Covering an area of 7,380 square miles within the East of England region, each ambulance will travel around 50,000 miles every year and is subject to strict maintenance schedules and procedures to ensure off the road time is kept to an absolute minimum.
Activity

Activity has reached a steady state over the last three years. On average there are 3.5 transfers every day, 25 every week. The split of completed elective to emergency work is approximately 50:50. For referrals the emergency to elective ratio remains at approximately 60:40. Reason for non-completed are reviewed at the individual unit annual outreach meetings and can occur for many reasons. The team may be busy (so another team would be asked to undertake if time critical), the baby may improve or deteriorate and transfer no longer required, declined as not ANTS criteria or aborted as transfer was not considered in the best interest of the baby and family. Units have a chance to review data specific to their unit on an annual basis with the ANTS team when attending their unit for outreach. If there are specific queries we encourage units to approach us immediately and we would address these at the time rather than wait until an outreach visit. This report gives a broad overview of activity as it would not be efficient to do every unit individually.

The service continues to work toward achieving the 5 Key Performance Indicators (KPI) as outlined in the Neonatal Critical Care Transport service specification published by NHS England (Service specification E08/S/6). In summary these are:

- Transfer 95%+ of patients within the catchment area of care for uplift
- Time critical - mobilise within one hour of call coming in
- Arrive at referring unit within 3.5 hours for a baby requiring uplift of care
- Submit to the annual National Transport Group (NTG) dataset
- Annual report published

### KPI 1

Dedicated Neonatal Transport Services transfer at least 95% of patients requiring transfer for uplift within its defined catchment area on an annual basis

This was achieved again, as in previous years, with 95% of patients transferred in 2016.
Mobilisation time: for time critical transfers the transfer team mobilises towards the patients within one hour from the start of the referring call (45% of retrievals annually).

This was achieved only 75% of the time in 2016 on the whole which was a fall from the previous year where it exceeded 80%. One immediate change in response to this was the change in shift times to give a greater spread throughout the day. This started in November 2016, we will continue to monitor this closely to understand any other barriers in 2017.
KPI 3

Referral response time the transport team will arrive with the patient (transfers for uplift of care for intensive care patients) within 3.5 hours of the referring call on 80% of occasions (excludes uplifts for planned procedures e.g. PDA ligation).

This was very close in 2016 with the standard met in 79% of cases, a slight fall from 81% in 2015. Bearing in mind the huge geographical challenge presented by such a large region this was still a good achievement. Even with emergency transfers blue lights and sirens are used cautiously due to the increased risk it causes for other road users. Slow and steady is preferred whenever possible but blue lights will be used where the clinical indications suggest timing is important or it means that the journey can progress steadily and avoid the stop / start situation which is not well tolerated for the babies generally.

KPI 4

Timely collection of the data required by NTG / BAPM dataset

Yes this was achieved and the data was published at the 2016 Transport Interest Group Meeting. As a region we measure well against our peers. However some data needs manual retrieval as our data base does not cover everything required. An electronic system to capture the data at input would ensure that the data is entirely accurate for those elements. The full report can be access at the TIG website (ukntg.net website). The graph below gives a comparison of activity during the first 6 months of 2016 across the UK, and it is apparent that ANTS is one of the busiest teams nationally.

KPI 5

Annual report published summarising activity, compliance with quality standards and clinical outcomes, progress from previous year, shared with appropriate stakeholders.

This is the first year for a while that there has been the capacity to produce an annual report. We hope it will be useful for you. We would welcome ideas to improve and develop the report.
In Utero Transfers

It remains a challenge to match up available neonatal cots with available obstetric beds and this was only possible in 83% of cases. It is not unusual for transfers to go out of region due to bed availability. Our experience is that the most frequent limiting factor is obstetric bed availability. Some units have tried hard to look at internal processes to help improve the situation. We look forward to better working together with the maternity review and the neonatal ODN to develop improved processes going forward.

Clinical Enquiries

This has remained steady for the past 3 years. The pathway for enquiries should be to the local tertiary centre unless it is from transport advice so it reassuring to see there is little increase in the activity in this area.

Stabilisation Time

This has not increased since last year.
Risky Business
Neonatal transport is a high risk area and robust risk governance systems are essential to minimise risk to patients. We encourage ANTS team members to have a low threshold for completing Safety Learning Reports (SLRs) in order to identify any areas of potential risk so that actions can be taken or measures put in place to try to prevent recurrence. Part of our governance procedure is a monthly risk newsletter ‘Risky Business’, written by the lead nurse and consultant for risk. This is distributed to all members of the ANTS team and includes points for shared learning. Below is a summary of some of the main areas of risk identified from the SLR system and how these are being addressed. During 2016, 401 Safety Learning Reports were completed.

Following discussions with the clinical leads at outreach visits and at the Clinical Oversight Group meeting the ANTS team have agreed to share any SLR reports relating to incidents at the referring or receiving units with the lead nurse. Similarly any Datix or QSIS reports generated at referring or receiving units which may have relevance/learning for the ANTS team will be forwarded to Sarah Rattigan, the ANTS service manager.

The team continue to work hard to reduce shift overruns. There are some overruns which are unavoidable in order to provide timely, optimal care to the baby (and to a subsequent baby if there are emergency referrals waiting). This is particularly challenging when there are no cots available at the nearest Level 3 centre, necessitating a longer journey to the receiving centre and then back to base. The covering consultant will risk assess the transfers and discuss with the team the need to overrun, particularly when this may have a significant impact on team availability the following day. The clinical condition of the infant and the possible impact of a delay in transfer will always be at the forefront of this decision-making.

The default remains in place that the next team on shift should dispatch immediately to relieve the team that is at a referring unit stabilising a baby. In November 2016 we changed our shift pattern to try to reduce the number and duration of overruns whilst still responding in a timely manner to the needs of babies around the region. The new shift pattern is:

Day 1: 08.00-20.30
Day 2: 10.00-22.30
Night: 21.00-09.30

Referring and receiving units can help to minimise shift overruns by referring babies as early as possible for transfer and prioritising cots for babies from their cluster hospitals in order to avoid long transfers across or out of region.
Dispatch Time for Emergencies

The team have continued to work hard during 2016 to reduce our dispatch times to emergency referrals. Updating the paperwork to streamline referrals, conference calls, ensuring kit is checked promptly at the beginning of each shift and administrative staff helping to print off the drug calculators have all helped to consistently reduce the dispatch time to 30-35 minutes. There is still work to be done however to reduce our dispatch times further in line with teams from Australia and the USA who aim to dispatch within 5 minutes of the referring call.

New Ambulances

In May 2016 the new ANTS bespoke vehicles arrived. These were specifically designed with our neonatal patients in mind. As well as being generally more comfortable with improved safety features they also include a new low-power suction unit, a defibrillator and improved storage to enable additional kit such as a bili-bed to be carried safely by the team at all times. There have been a few issues with malfunctioning tail-lifts, doors and climate control but these have been resolved in a timely manner by the St. John Ambulance team.

Equipment

- In 2016 we purchased 4 new suction units for the transport incubators. This allows the team to transfer babies with oesophageal atresia with the replogle tube on continuous low suction. The suction can also be attached to the Heimlich valve of a chest drain during transfer.
- In July, 4 new monitors arrived for the transport incubator to replace the old monitors which were nearing the end of their natural life. This has greatly reduced the frequency of issues with artefact when tracing arterial blood pressure and ECG.
- In December 2016, 3 new NOxBOX systems arrived to replace the discontinued Printernox system for administration/measurement of inhaled nitric oxide.
- Much of the ANTS equipment is nearing the end of its natural life and we have therefore had frequent issues with equipment malfunction or failure of safety checks. The team from the Clinical Engineering department at Addenbrooke’s has worked very hard to keep 2 fully functioning incubators in service and the senior team have worked closely with procurement to plan a replacement programme. This will include 3 new fully equipped neonatal transport trolleys with new SLE 6000 ventilators capable of delivering volume-targeted ventilation and HFOV. The ventilators will also deliver non-invasive respiratory support (CPAP and HPNC) via the same circuit.
Missing Equipment

In 2015 we were beginning to have serious issues with team members not checking kit correctly. Missing kit was being identified from the pouches in the ambulance and kit bag. This could have caused a major incident if the team were stabilising a baby and an essential piece of kit was missing. The lead nurse for risk developed checklists for the contents of each pouch which has been extremely successful in reducing the incidence of missing kit.

Workforce

In 2016 there continued to be significant risk around lack of Emergency Bed Service (EBS) co-ordinators. This is a particular risk at night when the clinical team are trying to answer emergency calls whilst stabilising a sick baby. Following approval at manpower a 5th EBS co-ordinator has recently been appointed which should minimise any rota gaps in the EBS team.

Navman

In July 2016 a new TV screen was set up in the ANTS office so that the Navman vehicle tracking system could be used and all EBS co-ordinators were given a login. Navman enables us to see the location of the ANTS ambulances at all times on a map including the road speed, which is beneficial for knowing if the team are stuck in traffic. This is an extremely valuable tool for logistical planning when the teams are out and an emergency referral comes in.

Handover

Handover of important information can be very challenging in a transport team with overlapping start/finish times. In November 2016 we introduced a more structured handover tool, particularly for the 8am handover to try to improve communication across the team. At each morning briefing we now review:

- Clinical details of babies awaiting transfer
- Rota gaps, logistical and equipment issues
- Vehicle, driver, road and weather issues
- Regional cot status and pending in-utero transfer requests
- All transfers completed over the last 24hrs
- Any Safety Learning Reports submitted over the last 24hrs
- Take 5 and AOB
In 2016 members of the ANTS team presented data from a number of service evaluation projects at the 2nd Edition Transport of High Risk Neonates conference in Copenhagen and at the National Neonatal Transport Group (NTG) conference in Bristol. A mixture of oral and poster presentations, these were important opportunities to share our practice with other transport teams from across the world. Data collected from our introduction of the use of High Flow Nasal Cannula into neonatal transport was published in Acta Paediatrica (Boyle MA, Dhar A, Chaudhary R, Kent S, O’Hare SS, Dassios T, Broster S. Introducing high-flow nasal cannula to the neonatal transport environment. Acta Paediatr. 2017 Mar;106(3): 509-512.)

**Education & Learning Opportunities**

Does Inhaled Nitric Oxide Improve Transferability of Preterm Infants with Severe Hypoxic Respiratory Failure?
W S Muhsen*, S S O’Hare*, S Broster*
*Acute Neonatal Transfer Service (ANTS) for the East of England.

The Changing Face of the Neonatal Transport Team: Supporting End of Life Care
A Kuligowska*, S S O’Hare**, S Broster**
*University of Cambridge Clinical School
**Acute Neonatal Transfer Service (ANTS) for the East of England.

To Transfer or Not to Transfer: Characteristics of an Aborted Elective Transfer
A Kuligowska*, S S O’Hare**, S Broster**
*University of Cambridge Clinical School
**Acute Neonatal Transfer Service (ANTS) for the East of England

Home or Hospice: Experience of the Acute Neonatal Transfer Service for the East of England (ANTS) in End of Life Care
M Karam*, S S O’Hare*, M Fiske*, S Broster*
*Acute Neonatal Transfer Service (ANTS) for the East of England.

What Took You So Long: Risk Factors For Prolonged Stabilisation Times During Emergency Transfers
P Amato Gauci*, S S O’Hare*, S Broster*
*Acute Neonatal Transfer Service (ANTS) for the East of England.
Nursing

In 2016 we welcomed new nurses to the team. The nurses follow a programme of education and induction over 4-6 weeks. This includes a week as the corporate induction for qualified staff. Staff are then introduced to the ANTS equipment and they have a set of 15 equipment competencies.

It is vital that the nurses know the equipment very well so that they can troubleshoot, teach others and identify problems quickly. The nurses are responsible for the equipment training of the medical staff as they change over. The competencies are either HIGH or MEDIUM risk so it is crucial to get training right.

The competencies are:

1. SLE6000 Ventilator
2. Babypac Ventilator
3. Drager Isolette T1500 Transport Incubator
4. Asena CC Syringe Pump
5. Neopuff (Pressure Limiting Resuscitation Device)
6. GE Portable Monitor
7. CO₂: End Tidal Microstream ANALYSER
8. Oxygen Analyser
9. Nitric Oxide delivery system (NOCBOX)
10. Glucometer
11. Active Cooling Mattress (Tecotherm)
12. EPOC Blood Gas Analyser
13. Optiflow High Flow Nasal Cannula
14. Low Flow Suction Unit
15. Phillips MRx defibrillator

High Risk
- Mandatory attendance / completion of recognised training session / course
- Recorded on MAPS by Trust training provider.
- Can be recorded on MAPS by area trainers if local procedures require

Medium Risk
- Attends recognised training course.
- On-the-ward training, learning from trained colleagues
- Recorded on MAPS as part of the HCA training programme or optionally by area trainers if local procedures require

Low Risk
- Staff able to read and understand user manual, basic operational instructions
- Can be recorded on MAPS by area trainers if local procedures require.

As well as being assessed as competent the nurses have an annual assessment of all of these equipment competencies. In addition there are mandatory training requirements including fire safety, manual handling, basic life support (adult and neonatal), medicines management, safeguarding, newborn screening and information governance to name but a few. Senior sisters will also have line manager essential updates. The nurses have mandatory training over 2 days during the year provided by Addenbrookes NICU practice development team to whom we are extremely grateful! Then other modules are e-learning and can be accessed at any convenient time.

A lot of training and updating, but this reflects the highly technical environment in which the nurses function. And all to ensure safe and effective care for our small patients. There are also individualised training opportunities according to the nurses’ professional interests and stage in their career.

Medical Education

Neonatal transport is a specialist placement, and is a requirement for all neonatal Grid trainees. Our teaching and training programme has been devised with this in mind, and is specifically designed for higher specialist trainees posted by HEE, EoE School of Paediatrics. The post is filled by Neonatal Grid trainees, and those trainees undertaking a recognised Neonatal SPIN programme. All trainees are allocated a specific Educational Supervisor, and all neonatal consultants are designated clinical supervisors for neonatal trainees. The rota is designed to have 1 week in every 8 week cycle that is specifically for training and education; it is anticipated this time will be used to complete audits and other projects, as well as attending specialist clinics within the Trust.

Because of the unique nature of neonatal transport, there are specific competencies trainees are expected to complete prior to their first clinical shift as the principle doctor in the team. These will be met by participation in the neonatal transport induction programme, which includes directly supervised shifts, accompanied by a transport consultant or experienced post CCT fellow. The induction programme is delivered by the neonatal transport consultants and senior neonatal transport nurses.

Training opportunities are focused not only on the clinical aspects of neonatal transport but also on the general competencies outlined by the RCPCH: knowledge and understanding, leadership and management, communication skills, understanding of governance and quality improvement. Trainees are allocated a management role to support their development and understanding. Currently roles include organisation of teaching programme, rota management, development and review of guidelines.

Trainees will be encouraged to attend at regional ST 4-8 teaching days as required by HEE EoE. Grid trainees are also expected to attend Grid Training days as mandated by the neonatal CSAC.

The Service will also support trainees to attend the national neonatal transport group annual conference, and provide opportunities to participate in local and regional quality improvement projects. Trainees are expected to undertake a service specific audit and they have been presented at both national and international meetings. Trainees get an opportunity to attend outreach meetings where they present cases and are an excellent platform for shared learning. We have structured weekly teaching programme. One of our major targets in education for the year 2017 would be to recommence ANTS stabilisation days and in house weekly teaching programme with regular simulation sessions.

As per RCPCH guidance, trainees at this level will be given opportunities to undertake SLEs which include, paediatric case based discussions, paediatric mini clinical evaluation exercise, directly observed procedure skills, direct observation of communication & multi-source feedback. The service also ensures trainees have the opportunity to undertake the RCPCH START assessment at the appropriate time.
ANTS Induction Programme for senior trainees and senior clinical fellows starting with the neonatal transport service. Venue: ANTS Office

Week 1
Monday: Trust induction
Tuesday:
0830 to 0900: Introduction to ANTS – lead consultant for ANTS
0900 to 1030: Office induction: ANTS Consultant / Manager
1045 to 1130: Equipment Induction: Senior Nurses
1200 to 1330: Lunch
1330 to 1415: Equipment Induction: Senior Nurses
1415 to 1500: Key Clinical cases (ANTS Consultant): 1. Preterm 2. PPHN

Wednesday:
0830 to 1030: Equipment Induction: Senior Nurses
1045 to 1115: Key Clinical cases (ANTS Consultant): 1. NEC 2. Surgical abdomen
1200 to 1245: Lunch
1245 to 1330: Risk & Clinical Audit: ANTS Consultant
1330 to 1430: Equipment Induction: Senior Nurses
1430 to 1500: Key Clinical cases (ANTS Consultant): 1. Preterm 2. PPHN
1500 to 1600: Key Clinical cases (ANTS Consultant): 1. NEC 2. Surgical abdomen

Accompanied Shifts: All day 1 shifts: 0800 to 2000; a minimum of 2 shifts will be undertaken with a consultant accompanying the team. This can be extended to more shifts as required to ensure the trainee is fully supported in acquiring clinical competencies. Trainees will also be accompanied by a consultant on further shifts during the placement to as part of the support and supervision provided during this post.

Equipment and Ambulance induction by Senior nursing team

By the end of this session, it is anticipated trainees will be familiar with and be able to demonstrate their ability to use the following equipment:

1. Incubator
2. Gas cylinders and connections
3. NeoPuff
4. Humidifier
5. Ventilators
6. HFNC
7. CPAP
8. End tidal CO₂ Monitor
9. Monitors
10. Nitric oxide
11. Tecotherm
12. Syringe pumps
13. Suction
14. EPOCH
15. Chest drain pack
16. ANTS bag and controlled drugs
17. Ambulance

ANTS Teaching Programme over 6 month period

<table>
<thead>
<tr>
<th>Month</th>
<th>EDUCATION TOPIC</th>
<th>WEK 1</th>
<th>WEEK 2</th>
<th>WEEK 3</th>
<th>WEEK 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>INDUCTION</td>
<td>INDUCTION &amp; COMPETENCIES Transfer logistics (Consultant)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>RESPIRATORY</td>
<td>Ventilation in Transport (Consultant)</td>
<td>Case review (Consultant)</td>
<td>Case review (Consultant)</td>
<td>Pneumothorax (Trainee &amp; Consultant)</td>
</tr>
<tr>
<td>3</td>
<td>CARDIOVASCULAR</td>
<td>Cardiac transfers (Trainee &amp; Consultant)</td>
<td>Case review (Trainee &amp; Consultant)</td>
<td>Vascular access &amp; Hypotension (Consultant)</td>
<td>Case review (Consultant)</td>
</tr>
<tr>
<td>4</td>
<td>NEUROLOGY</td>
<td>Cooling and seizures (Trainee &amp; Consultant)</td>
<td>Case review (Consultant)</td>
<td>Neurosurgical patients (Trainee &amp; Consultant)</td>
<td>Case review (Consultant)</td>
</tr>
<tr>
<td>5</td>
<td>SURGICAL</td>
<td>NEC &amp; Bilious vomiting (Consultant)</td>
<td>Case review (Consultant)</td>
<td>Abdominal wall defects (Consultant)</td>
<td>Case review (Consultant)</td>
</tr>
<tr>
<td>6</td>
<td>ETHICS &amp; PALLIATIVE CARE</td>
<td>Transport ethics (Trainee &amp; Consultant)</td>
<td>Case review (Consultant)</td>
<td>Palliative care &amp; transport (Consultant)</td>
<td>Case review (Consultant)</td>
</tr>
</tbody>
</table>

NICU Training

Trainees in neonatal transport are also encouraged to attend educational meetings within the Rosie Hospital NICU. The programme is mapped to the RCPCH neonatal curriculum, and is emailed to all trainees on a regular basis.

- Daily morning teaching including subspecialty teaching, risk management, mortality meetings and journal clubs.
- Thursdays 0830-0930: Grand round (Seminar 2b)
- Wednesday 1200-1300: Surgical meeting.
- Thursdays 1400-1500: Neurocritical care meeting. (NICU library)
- Tuesday 1300-1330: X-ray meeting (reporting room)
Social Media

2016 was a very busy year for ANTS and social media, we launched our Facebook and Twitter pages, and by the end of 2016 we had over 1000 followers. Our website has been fully updated with information, guidelines and paperwork for clinical teams around the region to access.

Our social media pages keep our followers updated with interesting facts such as how many transfers the teams complete each month, any out of the ordinary transfers e.g over 300 miles in one day, 4 transfers in one shift. As well as being a source of information with respects to fundraising and providing updates from families of babies we have transferred.

In 2016 ANTS launched our very own mascot, we ran a poll on our Facebook page to name him and the winning name was Stan (which is an anagram of ANTS). Stan is now given to all the babies we transfer and has proved to be very popular. He frequently accompanies members of the team on days out and holidays and photos from his travels are uploaded onto our Facebook and Twitter pages. Stan is solely funded by donations so we undertake a lot of fundraising throughout the year to enable us to provide Stan for babies in the future.

In 2016 both families of babies we have transferred and ANTS team members have been busy fundraising participating in activities as varied as charity walks to cake sales. We are extremely grateful to everyone who has supported us this year, thank you.

ANTS Social

ants.eoe

@ants_EOE

www.ants-neonatal.org

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Future Ideas for ANTS

New Trolleys
New ventilators (HFOV, HHFNC, PTV, VG, CPAP - one circuit)
IUT service review
Parent feedback
IO access availability
Outreach for all units at least annually
Use of technology to become more efficient and effective
Unit feedback
Case reviews
2 way sharing of learning reports
Fellowships
Use of technology to improve triage, information sharing & support clinical care
Fellowships
Study day for stabilisation
Consultant cover and availability to improve team resilience
New database
Airway adjuncts + difficult airway guideline
Medical staffing needs assessment
IUT service review
Use of technology to improve triage, information sharing & support clinical care
Parent feedback
Unit feedback
Use of technology to improve triage, information sharing & support clinical care