

# Southampton Oxford Retrieval Team (SORT)

Annual Report 2016-2017



<u>INDEX</u>	<u>Page</u>
Executive Summary	3
Background	3
Mission Statement	4
Service Standards	4
Organisational Structure	4
Retrieval Activity	6
● Seasonal Activity	6
● Referring Hospitals	7
● Age Distribution	9
● Acuity	9
● Refusals	9
● Specialist Retrievals	10
● Liaison with Other Teams	11
Quality and Safety Indicators	11
● Retrieval Times	11
● Transfers Out of Region	12
● National Standards	12
● Audit of Retrieval Practice	13
● Oxford and Southampton Children's Hospital Network	13
● Thames Valley and Wessex Paediatric Critical Care ODN	13
● Adverse Events/Near Misses	14
Parents	14
Equipment	15
● Retrieval Kit	15
● Ambulances	15
Education and Training	15
Outreach	16
Information Technology	18
Funding	19
Plans for 2016-2017	19
References	19
<u>Figure 1</u>	Referral Pathway
<u>Figure 2</u>	Seasonal Referral of Patients
<u>Figure 3</u>	Age Distribution of Retrieved Patients
<u>Figure 4</u>	Air and Sea Transfers
<u>Figure 5</u>	Response Times
<u>Figure 6</u>	Adverse Events/Near Misses
<u>Table 1</u>	Patient Referrals
<u>Table 2</u>	Referring Hospitals – Thames Valley and Wessex Region
<u>Table 3</u>	Referring Hospitals – Out of Region
<u>Table 4</u>	Mechanical Ventilation and Inotropes
<u>Table 5</u>	Causes of Out of Region Transfers
<u>Table 6</u>	Southampton Outreach Activities – Number of Sessions Attended
<u>Table 7</u>	Oxford Outreach Activities – Number of Sessions Attended
<u>Table 8</u>	Contributions of 'Friends of PICU' – 2016-2017

## Executive Summary

The Southampton Oxford Retrieval Service (SORT) has continued to provide a collaborative transport service for critically ill children in the Thames Valley and Wessex regions. During 2016-2017 there were 910 referrals resulting in 413 retrievals (45.3%), 310 advice only calls (34.0%), 66 patients transferred by other teams (7%), 26 refusals (out of scope care)(2.8%) and 5 (0.5%) refusals in the region. These figures are similar to those in the previous 2 years.

The highlights for 2016-2017 are as follows:

- Appointment of 2 new substantive consultants in Oxford (consultant compliment now 7 substantive posts) and 2 new locum consultants (1 full time equivalent) at UHS.
- Oxford ANP now an independent retrieval practitioner
- At UHS 1 ANP works independently, 1 in training and 1 starting training in April.
- Launch of the new ambulance for UHS.
- Two new identically kitted Ferno trolleys at UHS
- Purchase of a purpose built PIC ambulance for Oxford SORT by SJA
- Move to mobilise to 30 minutes from time of acceptance of retrieval in keeping with PICaNet 2016/17
- Streamlining Time Critical Transfer referral pathway in the Thames Valley region
- Establishing a robust policy prioritising paediatric critical care patients to be repatriated to our District General Hospital partners in the Thames Valley
- Introduction of an annual joint meeting for Thames Valley and Wessex Paediatric Critical Care Networks
- Improved transport feedback forms for service users
- Outreach programme expanded in the region.

## Background

The Southampton Oxford Retrieval Service (SORT) is a specialist transport service for critically ill children from birth to 16 years of age who require stabilisation and transfer to a Paediatric Intensive Care Unit. It is based across 2 sites: Southampton Children's Hospital (located at University Hospital Southampton) and Oxford University Hospital (located at John Radcliffe Hospital) and covers the South Central region of England including the Isle of Wight and the Channel Islands. The two centres have provided a combined service since June 2012 to ensure a 24 hour service.

Referral of all potential patients is made via point of contact based in Southampton taken by a clinician. This allows prompt and guidance in patient management. on the patient location, a team is from either the Southampton or Oxford child and parent is transported to Southampton or Oxford PICU depending on location, the availability of beds and any for specialist services only available at a centre.



a single with the call assessment Depending despatched site. The the patient's requirement given

## Mission Statement

The Southampton Oxford Retrieval Team (SORT) aims to deliver a high standard of evidence based intensive care to critically ill children and their families 24 hours a day 365 days a year. A consultant led service provides telephone advice along with support and assistance to hospitals throughout the region. Stabilisation of each child is undertaken with transfer to the appropriate paediatric intensive care unit for ongoing management. Regular review of all retrieval activity aims to ensure the ongoing development of the service.

## Service Standards

The core standards of the service are:

- Provision of specialist care whilst adhering to nationally agreed standards set out by the Paediatric Intensive Care Society (PICS).
- Ensure collaborative working between Southampton and Oxford retrieval teams and the referring hospitals.
- Delivery of advice and triage for all children referred to SORT.
- Provision of support and assistance to hospitals with critically ill children throughout the region.
- Co-ordination of the transfer of each child to the appropriate paediatric intensive care unit.
- If the child is known to a particular centre, SORT will liaise with that hospital as appropriate to co-ordinate transfer.
- Work with other retrieval/transport services to facilitate the provision of an optimum and timely service for each child.
- Audit of practice to maintain and develop the service with feedback to other services involved when required.
- Train and update the retrieval team to allow delivery of expert clinical care.
- Delivery of outreach teaching to ensure the ongoing development of care provided to each child during the resuscitation and stabilisation phase.
- Participation in the Thames Valley and Wessex Paediatric Critical Care Networks to meet local needs and provide a forum for the dissemination of key learning points.
- Participation in the Oxford and Southampton Children's Hospital Network

## Organisational Structure

SORT is staffed 24 hours a day by specialist retrieval medical and nursing personnel. A Paediatric Intensive Care Unit (PICU) consultant is available 24 hours a day to provide advice and undertake retrievals as required. There are 11 PICU consultants in Southampton and 7 consultants in Oxford with sufficient resources to provide a retrieval consultant rota 24 hours a day without impacting on the management of PICU. This ensures the care of all critically ill children is maintained. During 2016-2017, the number of retrievals undertaken by the PICU consultants was 139 (33.6%) in Southampton and 55 (83.3%) in Oxford. All other retrievals were led by ANP, fellows or registrars.

The retrieval nursing team in Southampton comprises of 33 Band 5-7 nurses and in Oxford there are 18 Band 5-7 nurses. All team members have completed a recognised critical care course, retrieval training and an advanced life support course. In Southampton, there is a Critical Care Technologist on all retrievals fulfilling the dual role of ambulance driver and critical care technician. This has proven to be extremely successful in delivering a high standard of care and decreasing the amount of time spent at the referring hospital.

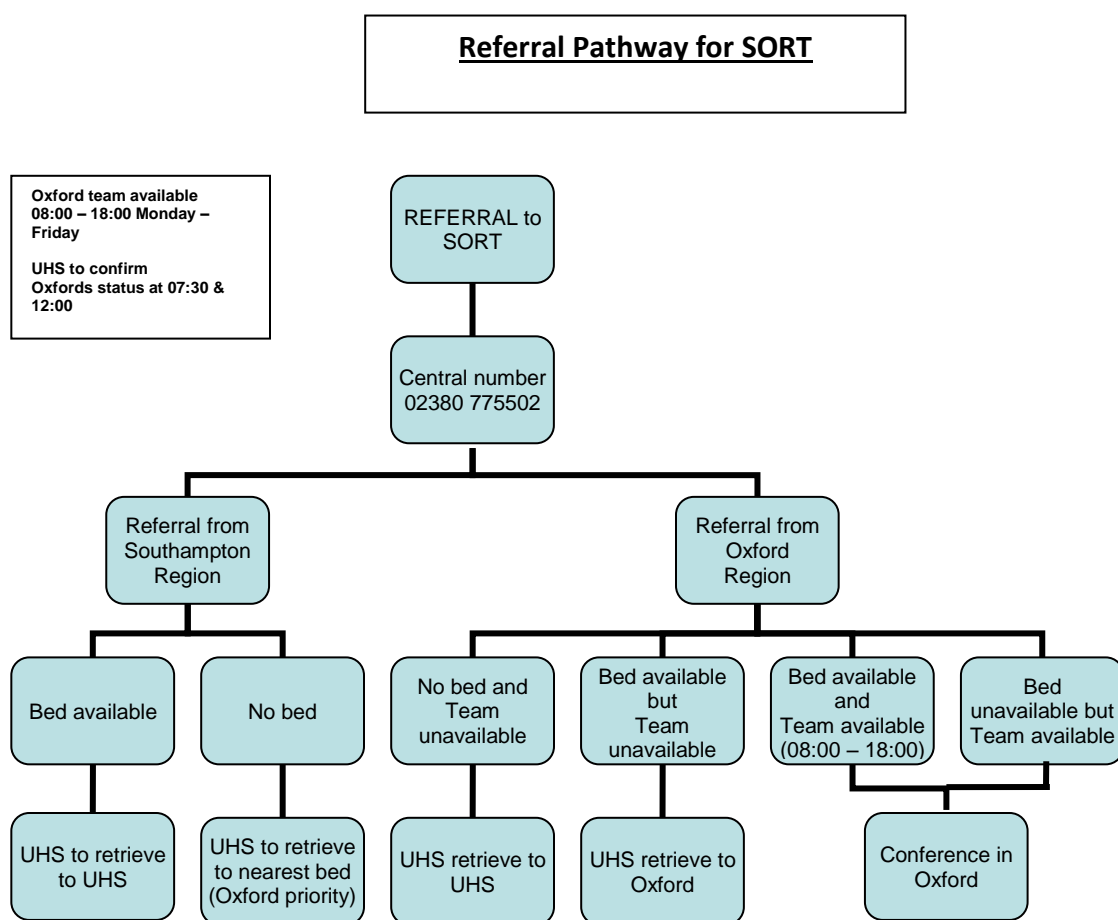
All referrals from the Wessex and Thames Valley region are single phone number at the PICU in Southampton and follow a pathway. Once a patient is accepted for retrieval, a decision is the most appropriate receiving PICU. If possible, attempts are the patient to their closest hospital. Patients from the region are retrieved by the Southampton team and taken to Patients from the Oxford region are retrieved by the Oxford Monday to Friday between 8am and 6pm. Outside of these hours, the retrieval is undertaken by the Southampton team transferring the patient to the appropriate PICU as per the day pathways. A second retrieval team is also available at Southampton during the peak referral period of Monday to Friday from 11am to 11pm. This flexibility has optimised the referral to retrieval pathway.



directed to a structured made regarding made to transfer Southampton Southampton. team from

Figure 1

Referral Pathway



## Retrieval Activity

A total of 910 telephone calls were received by SORT during 2016-2017. The actions taken by SORT since its creation can be viewed in Table 1.

**Table 1** **Patient Referrals**

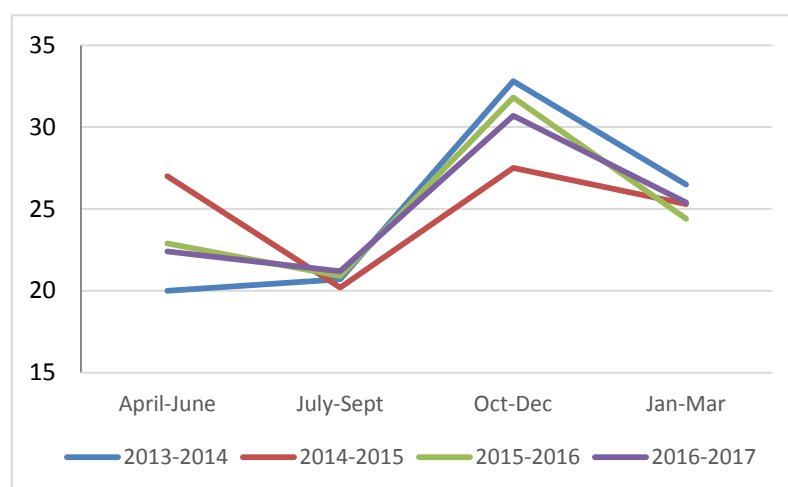
<u>Action Following Referral</u>	<u>2013-2014 Number of Patients</u>	<u>2014-2015 Number of Patients</u>	<u>2015-2016 Number of Patients</u>	<u>2016-2017 Number of Patients</u>
Retrieval by Southampton team	410	401	396	349
Retrieval by Oxford team	45	57	59	64
Transfers by other teams	154	77	41	66
HDU/ward transfer	N/A	N/A	34	65
Advice-only calls /patient condition improved	288	324	299	310
Refused retrieval in region	0	8	9	5
Refused retrieval out of region / out of scope of care	8	22	20	26
Remained ventilated in District General Hospital	1	4	6	5
Died before retrieval took place	7	3	3	5
Time critical transfers by local team	17 (included elsewhere)	9	19	15
<b>Total</b>	<b>914</b>	<b>906</b>	<b>888</b>	<b>910</b>

Throughout the last 4 years, there have been changes to the PICANet reporting making comparison of some actions challenging and this will have been experienced by all transport services. During this year, difficulties have arisen in the recording of refusal of Out of Scope of Care and Out of Region patients due to the latter category being withdrawn from November 2015.

### ● Seasonal Activity

The seasonal trends are similar with peaked activity occurring between October and December (Figure 2).

**Figure 2** **Seasonal Referral of Patients**  
(percentage)





## ● Referring Hospitals

The admission source of all patients continues to be principally in region with less patients being accepted from out of region (Tables 2 and 3). Although every attempt is made to support other transport services, this fall in number may be associated with an increased bed occupancy resulting in less opportunity to accept patients from other regions. The majority of transport is undertaken by SORT, but on occasions it is necessary for patients to be moved by other transport teams including the Southampton Oxford Neonatal Transport (SONeT) Team or local teams facilitating time critical transfers.

**Table 2** *Referring Hospitals – Thames Valley and Wessex Region*

<u>Referring Hospital</u>	<u>2013-2014</u>	<u>2014-2015</u>	<u>2015-2016</u>	<u>2016-2017</u>
<u>Alderney</u> – Mignot Memorial Hospital			1	0
<u>Aylesbury</u> – Stoke Mandeville Hospital	42	34	40	32
<u>Banbury</u> – Horton Hospital	11	5	8	4
<u>Basingstoke</u> – Basingstoke and North Hampshire	47	33	51	26
<u>Bournemouth</u> – The Royal Bournemouth and Christchurch Hospitals	1	2	1	3
<u>Chichester</u> – St Richard's Hospital	16	19	29	20
<u>Dorchester</u> – Dorset County Hospital	20	26	23	14
<u>Frimley</u> – Frimley Park Hospital	34	44	31	27
<u>Guernsey</u> – The Princess Elizabeth Hospital	1	4	6	4
<u>Isle of Wight</u> – St Mary's Hospital, Newport	12	15	16	12
<u>Jersey</u> – Jersey General Hospital	7	9	12	9
<u>Milton Keynes</u> – Milton Keynes University Hospital	40	52	36	32
<u>Oxford</u> – John Radcliffe Hospital	20	14	5	12
<u>Poole</u> – Poole Hospital	49	30	46	35
<u>Portsmouth</u> – Queen Alexandra Hospital	65	80	77	77
<u>Reading</u> – The Royal Berkshire County Hospital	70	57	40	31
<u>Salisbury</u> – Salisbury District Hospital	37	18	28	27
<u>Slough</u> – Wexham Park Hospital	30	23	34	24
<u>Southampton</u> – University Hospital Southampton	0	1	0	8
<u>Swindon</u> – Great Swindon Hospital	9	4	4	1
<u>Winchester</u> – Royal Hampshire County Hospital	28	27	22	16
<u>Worthing</u> – Worthing Hospital (trauma)	1	2	2	1
<u>Wycombe</u> – Wycombe Hospital	2	3	1	0
<b>Total</b>	<b>547</b>	<b>509</b>	<b>513</b>	<b>415</b>



**Table 3** *Referring Hospitals – Out of Region*

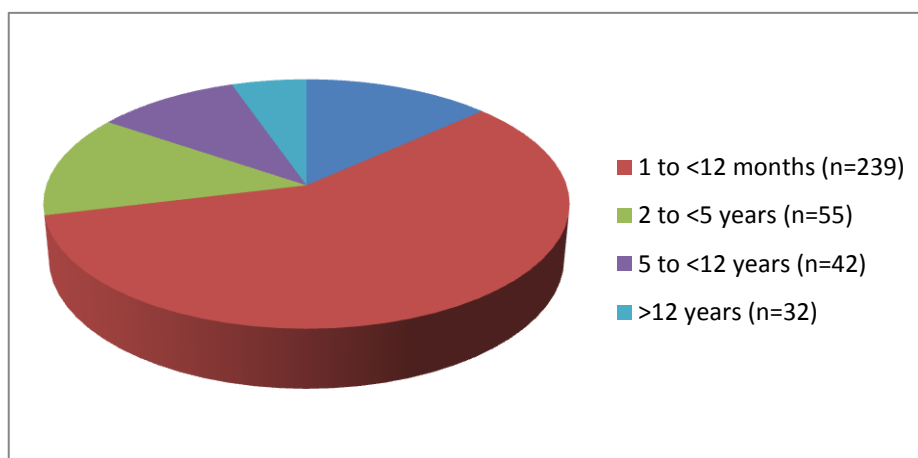
<u>Referring Hospital</u>	<u>2013-2014</u>	<u>2014-2015</u>	<u>2015-2016</u>	<u>2016-2017</u>
Ashford – William Harvey Hospital	0	0	1	0
Barnstaple – North Devon District Hospital	0	3	1	1
Basildon – Basildon University Hospital	0	0	1	0
Bath – Royal United Hospital	0	2	1	1
Bedford – Bedford Hospital	1	0	0	0
Birmingham – Birmingham Children’s Hospital	1	0	0	0
Bridgend – Princess of Wales Hospital	2	0	0	0
Brighton – Royal Sussex County/Royal Alexandra Children’s/Brighton General	4	6	2	2
Bristol – Bristol Children’s Hospital	2	0	0	0
Bury St Edmond’s – West Suffolk	1	0	0	0
Cambridge – Addenbrooke’s Hospital	1	0	0	0
Cardiff – University Hospital of Wales	0	0	1	1
Chertsey – St Peter’s Hospital	0	0	1	1
Exeter – Royal Devon and Exeter Hospital	0	0	1	0
Gloucester – Gloucester Royal Hospital	1	3	1	0
Guildford – Royal Surrey County Hospital	2	0	0	1
Isle of Man – Noble’s Hospital	0	1	0	0
Kettering – Kettering General Hospital	1	0	0	0
Leicester – Glenfield Hospital	0	0	1	1
Llantrisant – The Royal Glamorgan Hospital	0	1	0	1
London – Barnet Hospital	1	1	0	0
London – Chelsea and Westminster Hospital	0	0	1	0
London – Evelina Children’s Hospital	1	0	0	0
London – Great Ormond Street Hospital	1	4	0	1
London – North Middlesex University Hospital	0	0	1	1
London – Northwick Park Hospital	2	0	0	0
London – South Thames Retrieval Service	3	0	0	0
London – St George’s Hospital	1	0	0	0
Luton – Luton and Dunstable Hospital	0	0	1	0
Margate – Queen Elizabeth The Queen Mother Hospital	0	1	0	0
Merthyr Tydfil – Prince Charles Hospital	1	0	0	0
Newcastle – Freeman Hospital	0	1	0	0
Newport – Royal Gwent Hospital	1	1	0	0
Northampton – Northampton General Hospital	5	7	3	2
Norwich – Norfolk and Norwich University Hospital	1	0	0	0
Nuneaton – George Eliot Hospital	1	0	0	0
Plymouth – Derriford Hospital	4	2	1	4
Redhill – East Surrey Hospital	0	1	0	0
St Leonards-on-Sea – Conquest Hospital	3	0	0	0
Stevenage – Lister Hospital	0	0	1	0
Tadworth – The Children’s Hospital	0	1	0	0
Taunton – Musgrove Park Hospital	1	0	0	0
Torbay – Torbay Hospital	2	0	0	0
Treliske – Royal Cornwall Hospital	1	0	0	0
Uxbridge – Hillingdon Hospital	0	0	1	0
Worthing – Worthing Hospital (non-trauma)	3	4	7	19
Yeovil – Yeovil District Hospital	1	8	1	1
<b>Total</b>	<b>44</b>	<b>40</b>	<b>28</b>	<b>37</b>



### ● Age Distribution

The age distribution of the patients transferred by SORT in 2016-2017 continues to be similar to previous years with the majority of patients being less than 1 year of age (Figure 2).

*Figure 3                      Age Distribution of Retrieved Patients*



### ● Acuity

An indication of the acuity of the patients transported can be provided by the interventions undertaken either by the retrieval team or the local hospital team (Table 4).

*Table 4                      Mechanical Ventilation and Inotropes*

<u>Intervention</u>	<u>2013-2014</u>	<u>2014-2015</u>	<u>2015-2016</u>	<u>2016-2017</u>
<u>Mechanical Ventilation</u>	83.1%	79.6%	82.9%	81.1%
<u>Infusion of Inotropes/Vasopressors</u>	20.4%	12.9%	22.0%	15.4%

### ● Refusals

These are similar to 2016-2017, it was necessary to refuse 5 patients from within the Thames Valley and Wessex region. Although every attempt is made to ensure this does not happen, there are occasions during the busy winter months when the assistance of other transport teams is requested to facilitate the timely management and transfer of these patients to another PICU.

It was necessary to decline admission for a further 26 patients from outside the region or who were Outside the Scope of Care. This is usually associated with bed availability. The referring transport team continues the management of these patients and locates a suitable bed for them to undertake the transfer.

Five patients remained ventilated in their local district general hospital. For this to happen, the age and condition of the child is discussed with the local team to determine those suitable. Ongoing advice and regular follow up is provided by PICU to ensure optimal care and support.

### ● Specialist Retrievals

It continues to be the aim of SORT to transfer the majority of patients by ambulance as this provides a more controlled environment in which to manage the patient should there be a clinical deterioration. However, due to the geographical location of the region it is occasionally necessary to undertake air and sea transfers (Figure 3).

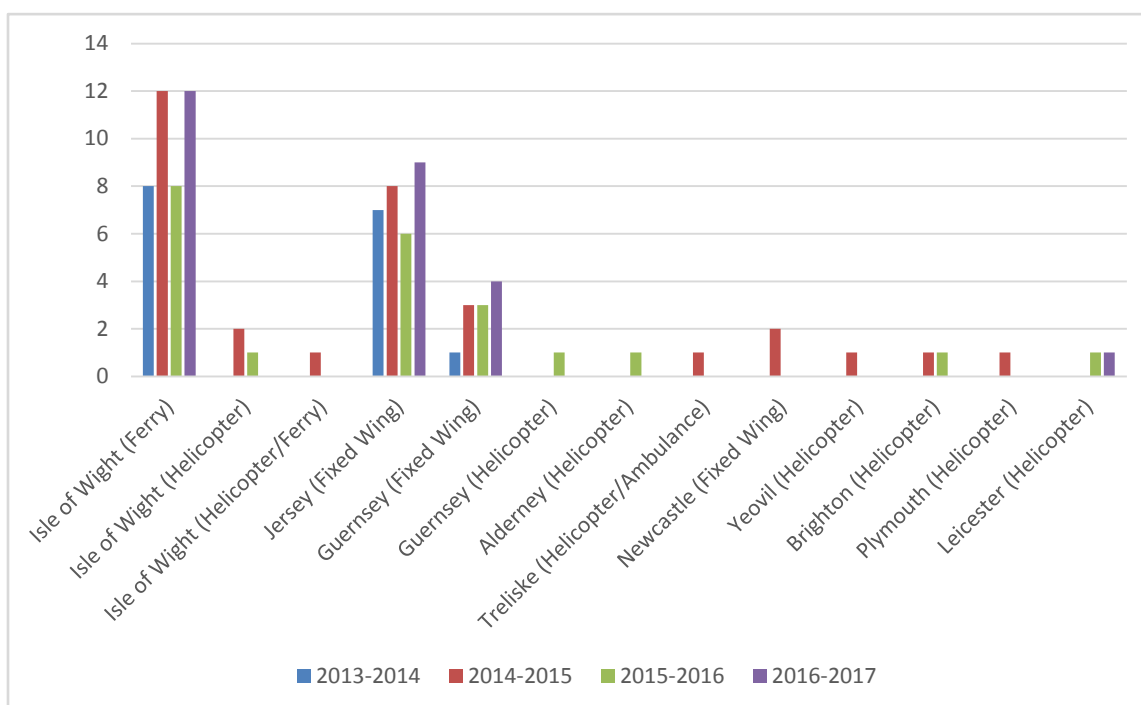


Throughout the year 12 transfers from the Isle of Wight were undertaken by ferry. On 14 occasions it was necessary to undertake flights utilising Capital Air Ambulance, The Children's Air Ambulance (TCAA) or the Coastguard helicopter. The availability of the Coastguard helicopter has facilitated the transfer of patients from the Channel Islands and IOW over night, if required, when fixed wing transfers are precluded by overnight airport closure or when there are no ferries.



**Figure 4**

*Air and Sea Transfers*  
(including elective transfers by SORT to specialist centres)



### ● Liaison with Other Teams

For all retrieval teams it is vital to have the support and assistance of other transport services to ensure the optimal management of each patient. Every transport service submits data to PICA Net for the patients they transfer. However, during 2016-2017 55 patients were transported under the guidance of SORT by non-specialist teams e.g. time critical transfers and some high dependency patients. An additional 28 beds were provided for out of region patients who were transported either by SORT or other retrieval teams depending on team availability.

## Quality and Safety Indicators

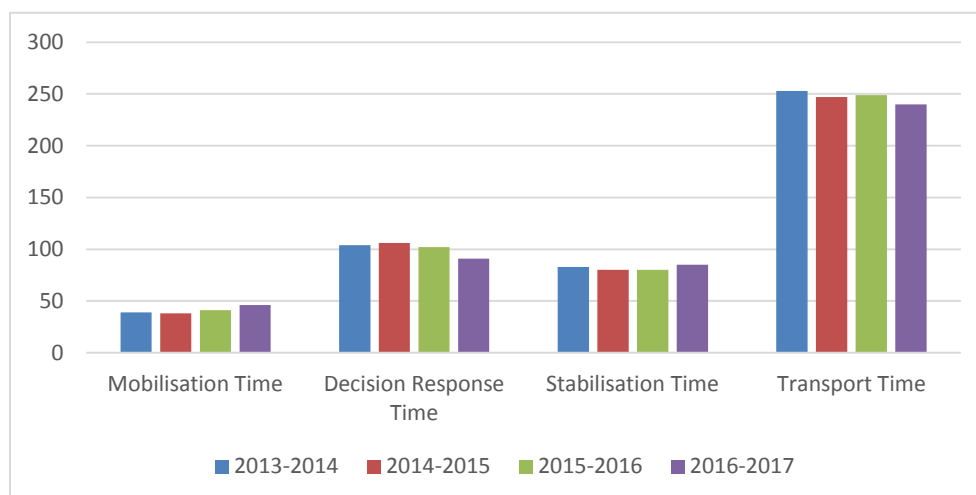
The quality of the service provided for critically ill children requires regular review. Several factors can be used to ensure evidence based practice is maintained and learning points from practice are shared and improved upon.

### ● Retrieval Times

A key indicator of the efficiency of a service is the time taken to respond to a request for assistance (Figure 4). Critically ill children need prompt management to avoid further deterioration. From the time of a decision being made that a patient requires retrieval for specialist care, the aim is to mobilise a team within 30 minutes (PICA Net 2016/2017). The median mobilisation time has remained consistently near 40 minutes. On 91 retrievals (22.0%), the mobilisation time was greater than 60 minutes with the peak in the busy winter period. This compares to 24.2% in 2015-2016 and 23.42% in 2014-2015. The most common reason for this delay overall is shift change over. When a referral is received towards the end of one shift, a decision has to be made about whether the patient needs immediate transfer or if they are safe to wait for a new team at the beginning of their shift, especially when travelling long distance. The time delay in securing transport by air or sea is another factor that can impact on mobilisation. However, it would be beneficial to reduce this time and potential time saving factors are being examined.

The most common reason for delay for the Oxford Team is the availability of a transport nurse. Due to the current staffing restraints the transport nurses, who are senior nurses, are sometimes required to support the PICU by being the Nurse in charge or assisting with patient duties. This can cause a delay in mobilisation whilst these duties are safely handed over to ensure the safety of all patients. This further supports the case to expand the retrieval service staffing capacity at Oxford to mitigate against such delays and to increase the hours of service provided.

**Figure 5** Response Times  
(minutes)



The **decision response time** is the time from the acceptance of the referral to arrival at the patient's bedside. The median time has consistently remained below the PICS (2015) standard of 3 hours despite the extensive geographical location of the region, especially out of hours when the Southampton team travels north into the Thames Valley region.

**Stabilisation time** at the referring hospital has fallen slightly. This may be related to the empowerment of the local team through outreach and regular feedback to institute initial management and the efficiency of the retrieval team once at the bedside.

The total **transport time** from leaving PICU to return to base remains similar to figures from 2015-2016. This is despite the out of hours agreement for the Southampton team to take Thames Valley patients to Oxford PICU before returning to their base in Southampton.

#### ● Transfers Out of Region

For all families their preference would be to have their child receive care in a PICU close to home. Occasionally this is not possible and it is necessary to facilitate a transfer to another PICU either due to bed availability or for additional specialist care. Due to the change in PICANet reporting, the figures for 2015-2016 does not include patients transported by other teams

*Table 5 Causes of Out of Region Transfers*

	<u>2013-2014</u> <i>No. of Patients</i>	<u>2014-2015</u> <i>No. of Patients</i>	<u>2015-2016</u> <i>No. of Patients</i>	<u>2016-2017</u> <i>No of Patients</i>	<i>Transferred By</i>	<i>Reason</i>
Patients Transferred Out of SORT Region	1	4	2	8	SORT	Bed availability
	7	12	14	13	SORT	Specialist treatment
	11	0	N/A	11	Other specialist team (PICU)	Specialist treatment

#### ● National Standards

Close liaison is maintained with other transport services through the PICS Acute Transport Group. Attendance at national meetings 3 times a year and membership of multi-media platform (Slack) has enabled sharing of practice and development of an evidence base related to the trial of new equipment. The PICS transport competency document continues to be used alongside local competencies to ensure staff training and assessment in line with nationally agreed standards.

Within the guidelines there is the recommendation to undertake training with the flight providers. During 2016-2017, a half day study session was provided by The Children's Air Ambulance in Coventry and simulation was included in the UHS flight annual update study day.

Ongoing submission of data to the Paediatric Intensive Care Audit Network (PICANet) within 3 months of each



retrieval occurring allows for benchmarking against other teams. The report published during this year (PICANet 2017) has allowed review of current practice and identified areas for further development such as mobilisation time.

- Audit of Retrieval Practice

Multidisciplinary weekly review of all retrievals is ongoing to allow for accurate data completion, review of practice, advice given and to follow up any adverse events. This is also an opportunity to feedback to all members of the retrieval service and to share learning points with the referring hospitals to enhance practice.

Monthly teleconference calls between Oxford and Southampton are now embedded in practice for SORT. We also undertake a monthly review of joint PCC transfer activity in the Thames Valley Region which allows for open discussion of the previous months work and incorporates not only the clinical component but also the operational aspects of service delivery. This means that care is standardised across the region and change is instigated successfully. This has been effective in developing the collaboration between the two regions and acts as a support network to develop practice. Any cases requiring higher level scrutiny are discussed as governance with the ODN and appropriately actioned.


- Oxford and Southampton Children's Hospital Network

OXFORD AND SOUTHAMPTON  
Children's Hospitals Network

Since its creation in 2012, the Children's Hospital Network continues to provide a partnership for the development of Children's Specialist Services in Oxford and Southampton. The aim is to share best practice, expertise and resources and so provide every child with the best possible care as close to home as possible (Oxford and Southampton Children's Hospitals Network 2016).

The network region covers some hospitals further north than of the SORT region. As a result, some referrals occasionally arise from hospitals which are a considerable distance from the base of the team retrieving. On occasions it is in the child's best interests to be transported by another retrieval team to ensure timely ongoing management.

- Thames Valley and Wessex Paediatric Critical Care Operational Delivery Network

 Thames Valley & Wessex  
PAEDIATRIC CRITICAL CARE  
Operational Delivery Network

During this year the Thames Valley and Wessex Paediatric Critical Care ODN has become funded with 2 tertiary centres supporting 18 district general hospitals in the region. With this funding it has been possible to appoint a Network Manager and Clinical Lead. The aim of the network is to ensure seamless care between primary, secondary and tertiary providers to improve the patient journey and ultimately patient care. The Network helps to ensure consistency in the quality and access to the service across the region.



Due to the size of the region, there are 2 smaller networks in operation. The Wessex PCCN has been in existence since 1999. Within Thames Valley, the Oxford Paediatric Intensive Care Network (PICNET) has been in operation since January 2013, being renamed as Thames Valley PCCN in 2015. Regular meetings between the retrieval services and the district general hospitals serve to provide

benchmarking, review service provision, develop practice guidelines and share best practice through morbidity and mortality reviews.

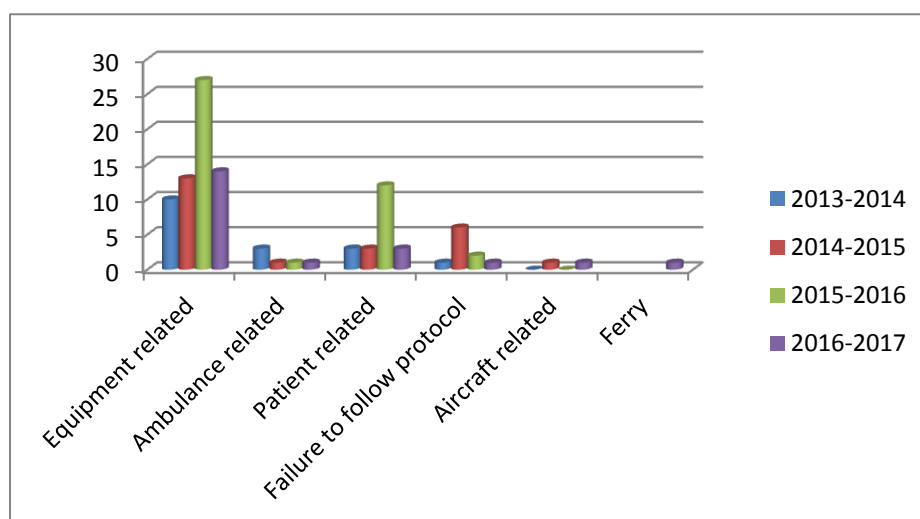
Work has been undertaken during the year to develop a new sepsis tool and review Paediatric Early Warning Systems to ensure consistency in assessing and managing these children. By rolling out these guidelines across the region, all children will benefit from the findings of this evidence based review.

#### ● Adverse Events/Near Misses

Reporting of adverse events or near misses is actively encouraged to ensure patient safety. Further actions are discussed at the weekly retrieval meeting with learning points being disseminated to local and regional teams. Significant events are utilised as the basis for simulation training or discussion at mortality and morbidity meetings. During 2016-2017 there were 21 events related to SORT retrievals (Figure 5). This equates to an incident or near miss on 5.0% of retrievals. Each of these is reviewed to identify any aspects of referral, advice or clinical management that needs addressing. There were a significant number of equipment related incidents with adverse event reporting provides the necessary evidence for new equipment or staff training.

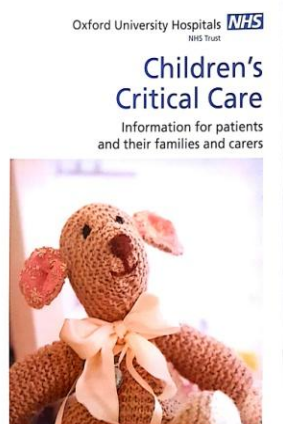
Figure 6

Adverse Events/Near Misses



## Parents

The involvement of parents in the retrieval of their child continues to be vital. They are able to provide support and reassurance if their child is awake and their presence allows regular updates and participation in the decision making process about ongoing management. Parents are able to travel with their child in the ambulance providing all aspects of safety have been considered. Information and guidance is provided by the local and retrieval teams and leaflets are given to parents about the service and the hospital where their child will be transferred.



## Equipment

### ● Retrieval Kit

It is necessary to carry specialist equipment that may be needed in transit or will not be immediately available in the referring hospital. The designated retrieval kit is reviewed and maintained on a regular basis to ensure it is fit for purpose. Experiences of new equipment are shared at the national PICS Acute Transport Group meetings to assist in the evaluation of any device for use in the transport of paediatric patients. During the year, the retrieval kit bags have been replaced in Southampton and we have standardised both trolleys with the Hamilton T1 ventilator. The retrieval kit boxes in Oxford have been streamlined, fully itemised and sealed to assist checks and faster mobilisation. A separate sealed drug bag and airway bag were employed which are checked daily. A maintenance logbook has been organised to ensure equipment is operating proper specification. The Paraid trolley was adjusted to facilitate carrying the Nitric Oxide cylinder and NOxBOXi if required.

### ● Ambulances

The availability of a retrieval ambulance is central to the provision of a responsive transport service. In Southampton the provision of the 2 retrieval ambulances is supported by the 'Friends of PICU' charity. This allows for simultaneous retrievals during the peak activity time. The ambulances are fitted with vehicle tracking and front and rear safety cameras. A third ambulance is available for repatriation of children to their referring hospital to improve bed availability and allow children to receive ongoing care closer to home. This service is managed separately from the retrieval service to avoid any conflict of interest.





The Southampton ambulances are driven by the Critical Care Technologists as a dual role. This has the added benefit of having a Technician on every retrieval who is able to assist in procedures and equipment set up. As a result, this enhances patient care and turn-around at the referring hospital allowing prompt transfer to a regional centre and enhanced availability of the retrieval team for subsequent referrals. All the drivers have received advanced driver training, co-ordinated by South Central Ambulance Service, and hold a C1 qualification which allows them to drive vehicles up to 7.5 tonnes.

In Oxford, there is a contract with St Johns' Ambulance Service to provide a paediatric retrieval service during daytime hours (9am-9pm) from Monday to Friday. The service comprises of a team of 7 drivers each with advanced driver training (IHCD Advance Driving Certificate or BTEC Level 3 in Ambulance Emergency Driving, or equivalent) as well as C1 category qualification on their driving license. There is a close working relationship with the Southampton Oxford Neonatal Team (SONeT) also based at the John Radcliffe site to flex drivers to accommodate SORT referrals at the margins of our working hours.

With the arrival of the designated PIC ambulance at Oxford safety has improved as the team have made specific adaptations for safer storage of kit during transport. In addition extra seating has allowed nursing and junior medical staff in retrieval training to accompany the patient as well as a parent/carer.

## Education and Training

In line with PICS (2015) standards, all members of the retrieval team receive induction into the service and are required to complete local competencies alongside national competencies set by the PICS Acute Transport Group. These competencies are reviewed every 3 years. Annual update study days are held for the multidisciplinary team and involve practice updates and simulation training. This year in Southampton flight training has been undertaken with one of the flight providers.

Mandatory education is provided for all PICU staff and covers health and safety, infection prevention, manual handling and child protection. In Southampton, all nurses attend a 'Paediatric Intensive Care Life Support' study day to maintain resuscitation skills and participate in simulation training. In addition, all retrievals nurses are required to undertake APLS or EAPLS every 3 years.

In Oxford, similar training is provided and is closely linked to each individual nurse's Personal Development Plan. Competency is reviewed yearly at appraisal. All members of the team work in line with PICS standards. They are trained using a competency approach, with local documentation running alongside the PICS national passports. All nurses must be deemed competent, hold a valid advanced resuscitation course (APLS/EPLS) and undertake yearly update training in resuscitation. All are up to date with the trust statutory mandatory training which includes information governance, health and safety, safeguarding, infection control, drug administration and manual handling. All nurses attend a yearly update day with a changing focus on current retrieval practice, scenarios, new equipment or similar.

## Outreach

Outreach education continues to form a central aspect of SORT to assist local teams in the development and maintenance of resuscitation and stabilisation skills. Within the PICS (2015) standards, each PICU is committed to providing feedback and training to referring hospitals within their region. This serves to enhance recognition of the critically ill child and optimise management prior to the arrival of the retrieval team. Within the Thames Valley & Wessex Paediatric Critical Care ODN Core Standards (2016), each hospital is requested to commit to 2-3 education events per year with the critical care multi-disciplinary team and one of these events to include simulation (Tables 6 and 7).



To achieve this standard, the Southampton team provides individual events at local hospitals and works with the 'Paediatric Innovation, Education and Research Network' (PIER) to provide paediatric courses. PIER is a collaboration of health professionals hosted by Southampton Children's Hospital and works

with partner organisations in the region to signpost all of the activities, work to improve the care of children and young people in the South of England and to develop their own innovative courses.

With administrative support from PIER, the Southampton PICU team along and paediatric anaesthetists provide the clinical expertise to run 'Making the Airway Safe' (MAST), 'Children's Trauma Training Day' and 'Stabilisation of the Critically Ill Child in the District General Hospital'. These courses involve multidisciplinary teams attending from the referral hospitals and include lectures and simulation which is undertaken with each member fulfilling their normal role. The courses are always oversubscribed and well evaluated.

Southampton has expanded the formalised outreach programme offering the DGHs twice a year education and governance sessions where anyone from the MDT team can attend. It has continued to be well received as a non-threatening means of enhancing knowledge, skills and confidence in stabilising the critically ill child whilst waiting for the retrieval team. Simulations are involved and is tailor made to meet their needs. The feedback has remained extremely positive.

**Table 6** *Southampton Outreach Activity – Number of Sessions Attended*

		Case presentations & simulation	Children's trauma training day	Critical airway / critical illness simulation	Making the Airway Safe Team (MAST)	Stabilisation of Critically Ill Child in DGH	Nursing presentations simulation	Total Number of Outreach Activities
Basingstoke	2013-2014	1				1		2
	2014-2015		1			1		2
	2015-2016		1		1	3		5
	2016-2017	1				1		2
Bournemouth	2013-2014		1					1
	2014-2015							
	2015-2016							
	2016-2017	1				1		2
Chichester	2013-2014	1	1					2
	2014-2015	1	1		1	1		4
	2015-2016	2	1			1		4
	2016-2017	2				1		3
Dorchester	2013-2014	2	1	1				4
	2014-2015	2				2		4
	2015-2016		1			1		2
	2016-2017	2	1		1	1		5
Frimley	2013-2014	1	1			1		3
	2014-2015							
	2015-2016	1	1		1	2		5
	2016-2017	1	1					2
Guernsey	2013-2014							
	2014-2015					1		1
	2015-2016							
	2016-2017	1						1
Isle of Wight	2013-2014					1		1
	2014-2015		1			1		2
	2015-2016		1		1	1		3
	2016-2017	2						2
Jersey	2013-2014					1		1
	2014-2015					1		1
	2015-2016	1						1
	2016-2017	1						1
Poole	2013-2014		1					1
	2014-2015	1		1	1			3
	2015-2016	1	1			3		5
	2016-2017	1	1		1	1	1	5
Portsmouth	2013-2014	1	1			1		3
	2014-2015	2	1		1	1		5
	2015-2016		1		1	1		3
	2016-2017	1			1			2
Salisbury	2013-2014	3						3
	2014-2015	3			2	1		6
	2015-2016	1	1		1			3
	2016-2017	2			1			3
Southampton	2013-2014				1			1
	2014-2015		1					1
	2015-2016		2		1			3
	2016-2017		1		1	1		3

Winchester	2013-2014	1		1	1	1		4
	2014-2015	3				1		4
	2015-2016	1		1		3	3	8
	2016-2017	1				2		3
Worthing	2013-2014	1	1	1		1		4
	2014-2015		1		1	1		3
	2015-2016	1	1			3		5
	2016-2017	1	1		1	1		2

Oxford embarked on a formalised outreach training and education programme for the Thames Valley DGHs in 2015 which has been consolidated upon year on year. Each DGH is allocated a designated PICU doctor and senior nurse as an outreach link. As a minimum the PCC link team visit each of the Thames Valley DGHs twice a year tailoring a programme of education to local needs. The organised academic half-days with anaesthetic, emergency department and paediatric attendance are particularly popular. Other outreach formats include attending transport case mortality and morbidity reviews, simulation scenarios and case based discussions. The emphasis is on open dialogue, teamwork and sharing knowledge to allow lessons to be learned and risk to be minimised.

In addition our bi-annual 'Care of the Child Awaiting Retrieval' continues to have excellent uptake, both the May and September sessions in 2016/17 had over 30 delegates attending each day. Recruitment has focussed on getting local multidisciplinary teams (ED, AICU, anaesthetics, operating department practitioners and paediatricians) to attend in their normal teams so that learning is embedded in any area a critical care child may present. We have been delighted to include our SJA ambulance drivers in these sessions. Our feedback for these sessions has been audited and the education programme adjusted if necessary. We are proud of the consistent positive feedback we receive as these days rely on a large amount of senior nursing and medical input.

**Table 7** *Oxford Outreach Activity – Number of Sessions Attended*

		Case presentations & simulation	Care of Child Awaiting Retrieval in DGH (Oxford)	OPERA course	MEPA course	Nursing presentations and simulation	Stabilisation of Critically Ill Child in DGH (Southampton)	Children's trauma training day (Southampton)	Making the Airway Safe Team (MAST)	Total Number of Outreach Activities
Aylesbury (Stoke Mandeville)	2013-2014									
	2014-2015	2. 2	1							3
	2015-2016	2								2
	2016-2017	4	2							6
Banbury (Horton)	2013-2014									
	2014-2015		1							1
	2015-2016	2	1	1						4
	2016-2017	1	1	1	1					4
Milton Keynes	2013-2014			1						1
	2014-2015	2	1	1		1				3
	2015-2016	2	2			1	1			6
	2016-2017	2	2	1						5
Reading	2013-2014	2				1				
	2014-2015	2	1			4	1	1		9
	2015-2016	1	1			1	3	1	1	8
	2016-2017	3	1							
Slough (Wexham Park)	2013-2014									
	2014-2015	2.2	1							3
	2015-2016	2								2
	2016-2017	2	2							4

Swindon	2015-2016		2						2
	2016-2017		2						2
Wycombe	2015-2016		2						2
	2016-2017		2						2

Oxford are fortunate to have the administrative assistance of OxSTaR – Oxford Simulation, Teaching and Research team for formalised teaching sessions such as

- **OPERA** - Oxford Paediatric Emergencies Resuscitation & stabilisation course - A team response,
- **MEPA** - Managing Emergencies in Paediatric Anaesthesia national paediatric simulation course that will help anaesthetic consultants/ trainees develop a management strategy when faced with emergency situations in paediatric anaesthesia.
- **Paediatric Advanced Trauma Skills Course – 2 day** Skills and Immersive Simulation course

Our PCC consultants and nursing staff work collaboratively with anaesthetic, theatre, ED and paediatric colleagues to provide credible experienced faculty for these simulation training courses. Whilst the initial focus has been on ensuring the tertiary centre staff are fully trained the programme is now being extended to include our DGH partners.

## Information Technology

The SORT website is often the initial point of contact for the referring hospitals. Alongside details of the referral process, it provides links to a drug calculator, guidelines to assist in patient stabilisation, information for families and regional education events. This resource is invaluable both for the region and PICUs and is easily accessible either in the hospital setting or whilst in transit.

Referrals to SORT are made to a single phone based on the PICU in Southampton which has been upgraded this year. It allows the retrieval consultant to be conferenced-in and so reduce time taken for history taking and advice to be given. If a patient originates in the Oxford region, the Oxford retrieval consultant is contacted and care devolved to the retrieving team. In order to reduce mobilisation time to under 30 minutes, emphasis is placed on contacting the Oxford retrieval consultant directly on a designated phone.

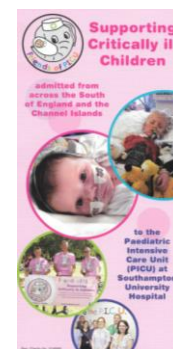
## Funding

Funding for SORT continues to be provided by the specialist commissioners which contribute towards the medical and nursing leads, junior doctors, critical care technologists/drivers and education and training. Additional funding required for the service is off set against PICU activity to make this a cost-effective means of resource utilisation.

Within Southampton, there is the 'Friends of PICU' charity which is involved in fundraising for PICU equipment. The charity continues to make significant contributions towards the purchase of retrieval equipment (Table 8) and will be providing significant funds for a new ambulance and 2 retrieval trolleys early in 2017.

**Table 8** Contributions of 'Friends of PICU' – 2016-2017

<u>Purchase</u>	<u>Cost</u>
2 Ferno Stretcher	£28,000
2 Hamilton T1 Ventilator	£30,000
New Ambulance	£118,000



Friends of PICU have already started fundraising for the next ambulance due in 2022.

In Oxford, the Oxford Radcliffe Hospital (ORH) Charitable funds exists to support the work of the Oxford University hospital trust in providing the best possible healthcare for its catchment of 2 million people and beyond by raising standards above which NHS funding alone allows. '**ORH Charitable Funds**' has helped to advance the transport environment for children at John Radcliffe Hospital by providing medical equipment that makes the retrieval journey safer for our patients. They have provided the following retrieval equipment in 2016-2017

*Table 9 Contributions of Oxford Radcliffe Charitable Fund – 2016-2017*

<u>Purchase</u>	<u>Cost</u>
Stock boxes for retrieval kit/ambulance	£80
APLS course fees for retrieval nurses	£600 x 2 = £1,200



### Plans for 2017-2018

As a continually developing service that is responsive to the changing needs of the hospital providers and patient population, it is important to plan how SORT can be developed. New challenges will emerge during the year, but initially plans for 2017-2018 are as follows:

- Fixed wing flight training with Capital Air Ambulance.
- TCAA training for the new helicopters planned for May. Potentially this will enable Channel Island transfers.
- Introduction of a Clinical Information System in June Southampton enabling increased electronic data collection.
- Aim to go paperless after evaluating the Medicus App. IPads for online monitoring and contemporaneous data collection.
- Introducing QR coding for online checks of all the retrieval kit.

## References

Oxford and Southampton Children's Hospitals Network (2016) Annual Report 2015/16

Paediatric Intensive Care Audit Network (PICANet) Annual Report 2017.

Paediatric Intensive Care Society (PICS) (2015) Quality Standards for the Care of Critically Ill Children (5<sup>th</sup> Edition)

Thames Valley & Wessex Paediatric Critical Care ODN (2016) (*Hosted by: Oxford and Southampton Children's Hospitals Network*) 'Network Membership Core Standards v2'

### Report prepared by:

Pamé Mc Aleer (Senior Sister/Retrieval Nurse Co-ordinator, UHS)

### Reviewed and edited by:

Gareth Jones (SORT Medical Lead, UHS)

Deirdre O'Shea (SORT Medical Lead, OUH)

Jo Bartlett (Sister/Retrieval Nurse Co-ordinator, OUH)

Iain Macintosh (PICU Medical Director, UHS)

Chris Cave (Lead for retrieval Critical Care Technologist, UHS)

Lesley Molony (Information Officer, UHS)