CHILDRENS' ACUTE TRANSPORT SERVICE ANNUAL REPORT 2016-2017

The Children's Acute Transport Service (CATS) is in its sixteenth year of providing dedicated specialist paediatric intensive care transport services for the North Thames, Hertfordshire, Bedfordshire, Essex as well as Norfolk, Suffolk and Cambridge Regions.

OUR MISSION STATEMENT IS TO PROVIDE: *the highest quality paediatric intensive care for patients and their families from the point of referral to the handover of care at the receiving paediatric intensive care unit.*

- *Single regional focus for provision of paediatric critical care for patients presenting as an emergency*
- *Provides 24 hour, 365 day, Consultant led telephone advice and a triaging facility for all referrals*
- *Committed to improving and developing the provision of critical care and critical care transport for all patients within its scope of care.*

Single point of contact

CATS provide a single point of contact for advice, bed finding, and a paediatric intensive care retrieval team for critically ill children

0800 085 0003

In 2016/17, the CATS service handled 2432 calls and mobilised an expert team on 1192 patient transports.

This represents an average of 7 calls for assistance and 3 patient transports on every day of the year.

EXECUTIVE SUMMARY

Highlights

CATS continued to offer an outreach simulation programme for referring hospitals, as well as a variety of one day study days.

CATS engaged in joint Survival Training with an external provider

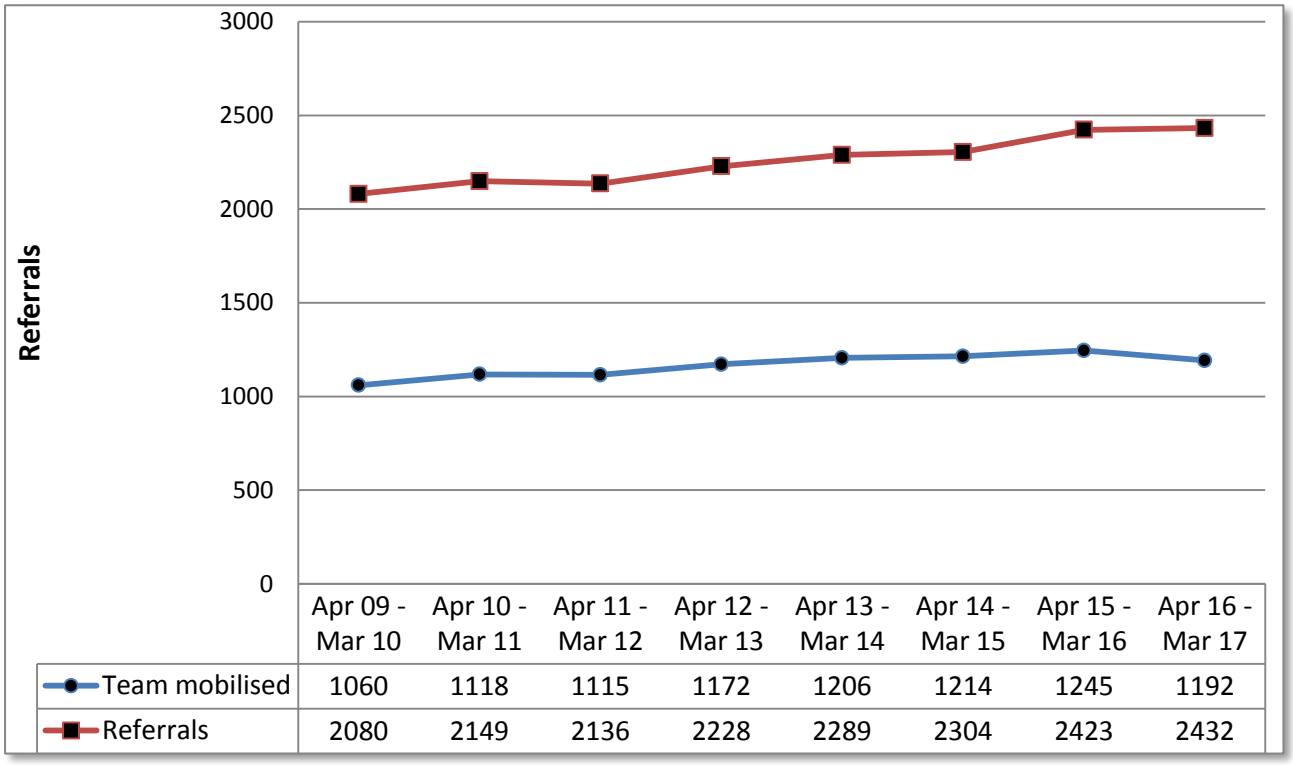
The CATS service submits data to the Paediatric Intensive Care Audit Network (PICANet), the national audit of paediatric intensive care activity. Reports from PICANet provide the ability to benchmark the CATS service against other Paediatric Critical Care (PCC) transport services in the UK.

CATS staff published several peer-reviewed research articles and presented at various national and international conferences.

Since the service was established there has been a year on year gradual increase in referrals and transfer activity.

In the graph below referrals are plotted in dark red, transports in light blue.
(Vertical axis = number of transports, Horizontal = financial year)

Some transport requests cannot be fulfilled – these are classified as refusals. Most refusals are not within CATS agreed scope of care (n=242).
In 2016- 2017 a total of 101 transports were refused because both CATS teams were already tasked. (In scope of care)
27 other referrals were refused because they fell into the category of "time critical transfers" (Surgical abdomen/neurosurgical emergency) that could not wait for a specialist transport team.



	Apr 09 - Mar 10	Apr 10 - Mar 11	Apr 11 - Mar 12	Apr 12 - Mar 13	Apr 13 - Mar 14	Apr 14 - Mar 15	Apr 15 - Mar 16	Apr 16 - Mar 17
Team mobilised	1060	1118	1115	1172	1206	1214	1245	1192
Referrals	2080	2149	2136	2228	2289	2304	2423	2432

DETAILED CLINICAL ACTIVITY

In 2016/17: REFERRALS: n= 2432

Referral outcome	Number (%)
CATS team mobilised	**1192 (49%)**
Advice/consultation only	**678 (28%)**
Refused - within scope of care	**101 (4%)**
Refused – outside scope of care (HDU transport etc.)	**269 (11%)**
Cancelled by referrer	**192 (8%)**
Death	**12 (0.5%)**

28% of referrals are resolved with advice/consultation without the need for patient transport.

Advice calls are an important part of CATS activity because early discussion may, in some cases, avert the need for PICU admission or help identify those that require PICU care early on.

Of the 678 calls coded as advice on initial referral 153 of these calls turned out to require transfer into PICU.

Referrers have repeatedly highlighted this aspect of CATS activity as an important role of the service.

Specialist transports n=1192

Destination hospital	Number (%)
Great Ormond Street Hospital	**465 (39%)**
St Mary's Hospital	**196 (16.5%)**
Royal Brompton Hospital	**133 (11.5%)**
Addenbrooke's Hospital	**131 (11%)**
Royal London Hospital PCCU	**113 (9.5%)**
South Thames PICUs	**78 (7%)**
Other/improved	**22/15 (3%)**

76% of the patients were transported to PICUs in North Thames (Great Ormond Street Hospital, St Mary's Hospital, Royal Brompton Hospital and the Royal London Hospital), while 11% of patients were transported to Addenbrooke's Hospital in Cambridge.

The CATS team was mobilised on 1192 occasions The outcome of all team mobilisations is illustrated below:

PCC transport outcome	Number (%)
Transferred	**1155 (96.9%)**
Patient improved – with the CATS team	**15**
Patient died – team on route	**2**
Patient died – with team at DGH	**10**
Retrieval cancelled	**6**
Too unstable to transfer	**4**

The CATS team continues to work in close co-operation with the other regional transport services such as the London Neonatal Transport Service (NTS), the South Thames Retrieval Service (STRS) and the Anglia Neonatal Transport Service (ANTS). During busy periods, these teams cross-cover to utilise existing PICU/NICU beds efficiently.

The team interactions and their outcome are depicted below:

Referral from	Requests	Accepted	Refused
STRS	**35**	**11**	**24**
NTS	**29**	**13**	**16**
ANTS	**10**	**6**	**4**

Patient acuity of CATS transfers was high – the majority of patients were invasively ventilated, and a significant number needed inotropic support and inhaled nitric oxide during transport.

Invasive ventilation rate	**72%**
Vasoactive agent use	**29%**
Inhaled NO	**4%**

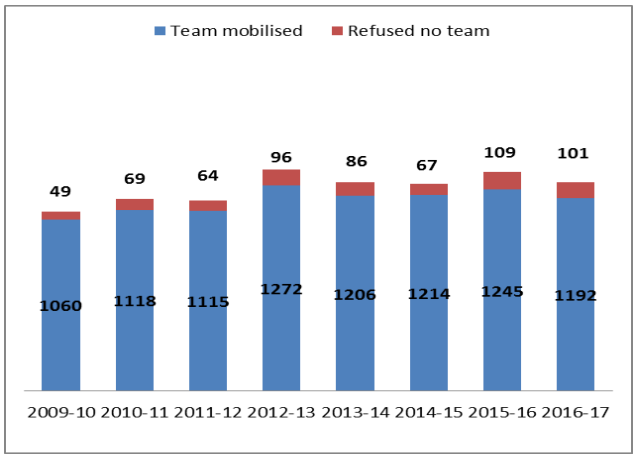
QUALITY AND SAFETY AT CATS

As part of our ongoing quality and safety program, a number of performance indicators are continuously audited at CATS.

CATS measure the number of times we are unable to fulfill our PCC transfer activity due to lack of team availability. ***In 15-16 we were unable offer a team in about 8 %(109) of our overall activity.***

Refused No Team v Team Available

All children refused because of "no team available" are referred on to other services.

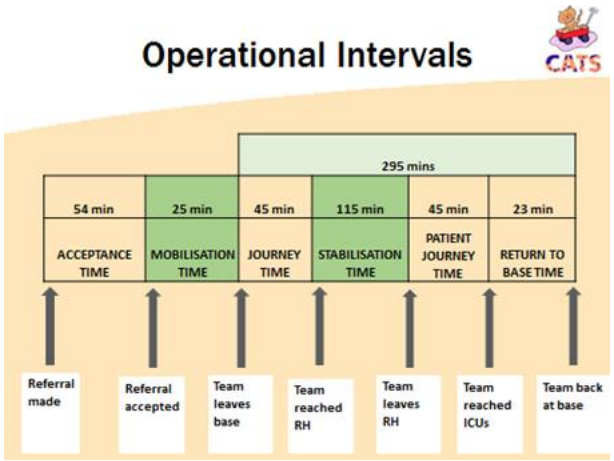


Mobilisation times

Mobilisation time interval is defined as "The time from when the decision to retrieve is made to the team departing the CATS base".

The CATS target time is 20 minutes. This data is reported monthly.

All mobilisation delays are recorded and reviewed at the monthly CATS mortality & morbidity meeting ***On average we achieve our target 74% of the time.***



Out of Region Transfers are also reported via the commissioning team. In 2016-2017 there were ***8 children from the London Region that required transfer out of region because of no PICU beds locally.***

Another quality indicator is the ability for the service to respond in a timely manner once the child has been accepted for PICU. The time to patient beside target is 3 hours from acceptance to PICU. *The Paediatric Intensive Care Society (PICS) Standards (2015) recommend that PCC transport teams should be able to achieve this QI in 95% of the cases accepted for PICU.*

On average CATS achieves this target in 85% of cases *and in geographically isolated areas the target is 4 hours*

Critical Incidents Reported Through PICANet

Incident type	Number (% of all transports)
Accidental extubation	2 (0.2%)
Intubation in transit	1 (0.1%)
Cardiac arrest	10 (0.8%)
Loss of medical gas supply	2 (<0.2%)
Loss of IV access	2 (0.2%)
Ventilator/Monitor failure	10 (1%)
Ambulance accident	2 (0.2%)

CATS report locally on drug prescribing errors as well as safeguarding concerns. It is a mandatory field on the CATS medical form and must be filled out for all transfers undertaken.

RESEARCH & AUDIT

CATS continued to participate in both research and audit activity

Interventional Trials

FiSH trial (pilot)
10 ml/kg bolus fluid versus 20 ml/kg bolus fluid in septic shock

FEVER trial (pilot)
Permissive target (39.5C) versus restrictive target (37.5C) in sepsis

Observational Studies
BASIC
Biomarkers to diagnose bacterial infection and risk
OSTRICH
IV salbutamol pharmacodynamics/kinetics
DEPICT
National variations in access to retrieval teams and outcomes/patient experience

CATS EDUCATION AND TRANING PROGRMME

The CATS education and training programme comprises education delivered internally, regionally, nationally and internationally and is outlined below:

CATS Outreach Programme
• **Consultant/Senior Nurse delivered** • **~ 1200 attendees per year** • **Locally designed team training** • **CBD, debriefing and simulated learning**
CATS Internal Education Programme
• **Medical and nursing induction** • **Multi-disciplinary weekly education day** • **Team training and simulation**
CATS Situation Critical
• **Multi- modal regional study day** • **Lectures, workshops and simulated scenarios**
CATS Stabilisation and Transport Simulation Course
• **Immersive team-based simulation course** • **Principles of stabilisation** • **Multiple clinical scenarios**
Severe Hypoxia and Refractory PPHN Course
• **Multi-modal educational collaboration with NTS** • **Lectures, workshops and simulated scenarios**
PIC-NIC Course
• **Multi-modal educational collaboration with NTS** • **Lectures, workshop and simulated scenarios** • **PIC and NIC delivery in resource poor settings**
Safety, Security and Survival Course
• **Multi-modal educational collaboration with Survival Wisdom** • **Team training and simulation** • **Principles to reduce risk, improve safety and chances of survival in a non-clinical emergency**
Stabilisation and Transport of the Critically Ill Child
• **MSc module to run at Imperial College University 2018/2019**