Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

HSE Serious Incident Management Team

Incident Review: SIMT0311

Final Report August 2011

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Appendices

1. Executive Summary

Ms Mc G is designated as a 'priority' patient on the liver transplant list; she is a fourteen year old girl who lives in Co Leitrim with her parents and an older sister.

During the evening of the 2nd July 2011 the family of Ms Mc G were contacted by the Transplant Co-ordinator at Kings College Hospital London and informed that a liver had become available for Ms Mc G. Due to delays in securing the appropriate transport to effect the transfer of Ms Mc G and her parents within the time-frame required, Ms Mc G and her family were informed that she should not travel to London to undergo the liver transplant procedure.

Ms Mc G and her family returned home during the early hours of the 3rd July and the organ was transplanted into another patient awaiting a donor liver from the transplant waiting list.

This incident was deemed by the Health Service Executive (HSE) to fall into the 'serious adverse incident' category. On this basis an investigation of the incident was commissioned by the Health Services Executive Serious Incident Management Team.

The aim of the investigation was to:

- Establish the factual circumstances leading up to the incident
- Identify any Care/Service Delivery Problems that contributed to the incident
- Identify the contributory factors that caused the Care/Service Delivery Problems
- Recommend actions that will address the contributory factors so that the risk of future harm arising from these factors is eliminated or if this is impossible, is reduced as far as is reasonably practicable.

At the outset it should be highlighted that Ms Mc G and her family were devastated by their experience of the events of the 2nd July; however the family emphasised that what they wanted was that any investigation undertaken should focus on learning from the incident so that it would not happen again.

It is unequivocally acknowledged by all of those involved in this investigation that the events of the 2nd July were devastating for Ms Mc G and her family; and that the incident required to be comprehensively investigated to ensure that any and all lessons could be learnt.

The Irish agencies and personnel directly involved in the efforts to transfer Ms Mc G on the 2nd July indicated that they were committed to investigating and learning from this incident as this was the first occasion where a child/young person had not reached Kings College Hospital within the time-frame required to be considered for a transplant procedure.

The investigation noted that over the past five years that 22 children who attended Our Lady's Children's Hospital Crumlin (OLCHC) have been successfully transferred to Kings Hospital London to undergo liver transplantation procedures; the yearly breakdown of these transfer figures provided by the hospital is as follows:

- 2007 – 2 children
- 2008 – 3 children
- 2009 – 4 children
- 2010 – 5 children (+ 2 children transferred from OLCHC who underwent transplantation at Bermingham Childrens Hospital following referral from the Freeman Hospital Newcastle)
- 2011 – 8 children until end of July

In addition 2010 figures from the hospital demonstrate that 19 children who attended the hospital were successfully transferred to Kings College Hospital London to undergo liver transplantation assessment or liver transplantation procedure.

The reviewers who undertook this investigation noted the commitment and dedication of all of the individuals who they met as part of the process and who represented the organisations/agencies involved. The general view expressed by all of the individuals who participated in this investigation was that this process i.e. the air transfer of paediatric patients for transplant related to the care of children/young people and that therefore 'all of the stops should be pulled out'.

Many of the individuals involved in the events of the 2nd July expressed deep regret and distress that they had been unable to ensure that Ms Mc G had reached Kings College Hospital in time to have a chance to undergo transplant

Key Findings:

The key findings of the investigation were that the current processes in operation for the transfer of children who are resident in the community or inpatients of Our Lady's Children's Hospital Crumlin (OLCHC) being treated under the HSE's treatment abroad scheme including to Kings College Hospital London to undergo liver transplant are highly complex and specialised.

In addition the investigation identified that the operation of these processes requires the co-ordination and streamlining of a number of highly specialised, and technical strands; provided by a number of disparate organisations/agencies whose primary role in many cases is not the transport of paediatric transplant patients; but who work together to try to make this happen.

The investigation identified the following Service Delivery Problems:

1. Lack of clarity related to the individual roles and responsibilities of each of the agencies involved in the air transport of patients from Ireland to the United Kingdom; and related to how these individual roles and responsibilities 'fit together' to ensure that the transport arrangements are made in a consistent and seamless manner.

2. Lack of clarity regarding the time-lines in operation on the 2nd July related to the time available to transport Ms Mc G to Kings College Hospital London.

The investigation identified that although there was a protocol in place that had been developed by the HSE Ambulance Service and that had subsequently been adopted by OLCHC that in general there was an absence of jointly and formally agreed protocols operating between all of the agencies/organisations involved in the emergency air transport of patients.

The investigation identified that while there is a Service Level Agreement in place that relates to the interface between the Ambulance Service of the Health Service

Executive and the Air Corps; that there is currently no formal agreement in place between the Ambulance Service and the Irish Coast Guard related to the provision of aircraft to effect the air transfer of transplant patients[1].

The current arrangement in place between the two organisations is informal and based on good will; a recognition that this is 'a life at risk'; and an acknowledgement that both agencies represent State bodies.

In addition it was highlighted to the reviewers that the Coast Guard involvement in the transfer of patients from Ireland is a very new task and as a result until now the Irish Coast Guard has developed limited corporate and operational awareness related to these processes in the absence of an SLA/MOU.

It was identified that a new process for organising air transport had been agreed and was due to come into operation from the end of July 2011. This process provided for Nursing Administration at OLCHC and the HSE Ambulance Service to assume responsibility for the organisation of air transport for transplant patients.

While there was evidence that considerable work had been done related to the sharing of protocols among stakeholders; there was also evidence that this new process and associated protocols were not communicated to all of the relevant stakeholders in a timely manner.

The reviewers were informed that the plan related to the new process was developed following meetings with the HSE Commercial Unit and Ambulance Control personnel and that it was agreed that the process of overseas transportation would be improved for patients by streamlining the process from a two system approach i.e. health services and independent contractor to a one system approach i.e. health services alone. The reviewers were informed that it was agreed at that time that each of the services involved had a key role to play; with each bringing the necessary competencies to the transfer process.

There was evidence that Nursing Administration staff had experience of organising a number of successful transplant patient transfers; and that the staff undertaking the function indicated that they were satisfied that they knew what their roles and responsibilities were. It was noted that the requirement that Nursing Administration assume a central role in the sourcing and organisation of transport arrangements i.e. when State assets were unavailable - places an additional and significant responsibility on Nursing Administration staff members who may be working alone at the time and who are already responsible for the overall nursing management of a busy paediatric hospital.

Furthermore it was highlighted that requests for transfers often occur over a weekend or during the night-time period when there are reduced staffing levels available in the hospital.

At the time of writing this report there was no guidance available as to how the agencies involved in the air transport of patients for transplant should pool and evaluate all of the available information so that they could effectively compare and contrast the available modes of air transport to select the most appropriate mode of transport in the situation presented.

[1] The Coast Guard and the National Ambulance Service do however have an agreed SLA in place related to the function of the Maritime Ambulance Response Team (MART).

As stated previously the organisation of air transport to transfer a transplant patient is a complex process which requires a significant level of understanding of aviation rules and logistics. This is a competency that senior nursing and ambulance managers currently do not possess.

The investigation noted that while considerable work had been done related to the sharing of protocols among stakeholders; that there was no robust governance structure/ processes in place that represented all of the stakeholders in order to review and monitor all aspects of the operation of the arrangements related to the organisation of air transport of patients on the transplant list; in order to facilitate open and clear communication between all of the agencies/organisations involved in the process; to ensure that safety concerns/issues are addressed in a timely manner and to ensure that the arrangements are continually reviewed on the basis of learning from incidents/near misses etc.

It was confirmed during the investigation that this was the first time that any child/young person being treated under the HSE's treatment abroad scheme had been offered a liver from a non heart beating donor (NHBD). The reviewers were informed that any liver transplant where the various Irish agencies/organisations had been involved in arranging transport previously had been for liver transplants where the donor was a heart beating donor. It was stated that it was the experience of all of the staff/individuals based in Ireland who had been involved in organising previous air transfers that the time available to effect the transfers of the patients involved had been in the region of eight to ten hours. The representatives from Kings College Hospital involved in the investigation indicated that in their view that transfers would usually take a much shorter time than this.

It was also highlighted that there was evidence that there was a lack of shared understanding regarding the time limitation in operation regarding Ms Mc G's arrival at Kings College Hospital; and a lack of knowledge related to the technical and logistical capabilities and limitations of the aircraft that was being sourced to transport Ms Mc G and her family to London which hampered the decision-making abilities of the staff/individuals involved in the process at the time.

Recommendations:

Recommendation 1:
That as a matter of priority that all of the stakeholders involved in the organisation of air transport arrangements for children who are resident in the community or inpatients of OLCHC being treated under the HSE's treatment abroad scheme who require transplant should develop, implement, exercise and audit (the process for audit to be agreed through the governance structures/processes established) a suite of formally agreed and approved inter-agency protocols which clearly define the roles and responsibilities of all of the agencies/organisations involved in the process and that further defines the process for the review of the operation of such protocols.

Recommendation 2:
That any changes to internal processes/protocols related to air transfer arrangements made by one or more agencies/organisations involved in the provision of air transport services must be formally communicated in a timely manner to the other agencies/organisations involved and that inter-agency protocols in place are amended accordingly.

Recommendation 3:
That any safety concerns raised in relation to the operation of the protocols in existence are fully considered at the time by the appropriate governance body and in line with the HSE Risk Register process to ensure that such concerns are risk assessed; and that appropriate control measures are identified and implemented to address these safety concerns.

Recommendation 4:
Because of the technical and logistical complexity of the processes required to arrange air transportation; and the number of agencies/organisations currently involved in the provision of air transport arrangements; consideration should be given to centralising the organisation of emergency air transport arrangements to one agency/organisation. This will allow that organisation to build up a level of expertise, competency and understanding of all of the issues related to the process and will also ensure that the process is more streamlined and efficient. It will also ensure that all communication is directed through one central point. Related to the centralisation of this function it is also recommended that consideration is given to the development of shared ICT to facilitate rapid and clear transfer of data and pre-understanding of the availability of aircraft.

Recommendation 5:
That as a matter of priority that a formal Service Level Agreement or Memorandum of Understanding[2] should be agreed and implemented between the Departments of Health and Transport in respect of the joint working arrangements between the Irish Coast Guard and HSE Ambulance Service in relation to the provision of emergency air transport to patients on the transplant waiting list and that the implementation of the SLA or MOU is supported by the development of formalised and documented protocols.

[2] It was suggested to the reviewers that the existing SLA related to the function of the Maritime Ambulance Response might form the basis to of the agreement and might be expanded to encompass further matters of service, standards and interoperability.

Recommendation 6:
That all relevant staff working within the agencies/organisations providing emergency air transport receive appropriate intra-agency/joint training and education in the implementation of such protocols to ensure that they are fully aware of their roles and responsibilities and that such training is also included in induction training provided to new employees.

Recommendation 7:
That as a matter of urgency and as an interim measure i.e. until such a time as a centralised unit is identified to organise air transfers that the senior management team at OLCHC should review the current arrangements that require that Nursing Administration oversee the organisation of air transportation arrangements when a State asset is unavailable for paediatric patients on the transplant list to ensure that this is appropriate and safe.

Recommendation 8;
That a governance structure and processes are put in place to monitor and review all aspects of the arrangements to transfer patients who are resident in the community or inpatients of OLCHC being treated under the HSE's treatment abroad scheme for transfer for transplant to Kings College Hospital London. This governance group should include senior management representatives of all the stakeholders in these arrangements including but not necessarily limited to the following:

- OLCHC
- Kings College Hospital London
- HSE Ambulance Service
- The Air Corps
- The Coast Guard
- An Garda Síochána
- Patient representative
- HSE Commercial Unit
- Any other relevant stakeholder(s)

Recommendation 9:
That as an interim measure and notwithstanding the valid reasons for the implementation of the current practice in relation to the communication of time-lines for patients travelling from Ireland to Kings College Hospital for liver transplantation that the Liver Transplantation Team at the hospital will as far as is reasonably practicable[3] communicate required time-lines for the arrival of the patient at the hospital; and will communicate information related to the type of organ that is available where this has an implications for the time-line so that decisions can be made about the most appropriate mode of transport.

Recommendation 10:
That as part of the inter-agency protocols that are developed related to air transport arrangements for transplant patients; that consideration should be given to proactive planning arrangements e.g. securing of the necessary IAA approval for the Coast Guard helicopters to land at the closest appropriate location. The protocols should also include the sharing of relevant information (with the permission of the families/guardians) e.g. the home locations of patients on the transplant lists/nearest

[3] It was highlighted that it will not always be possible for Kings College Hospital to communicate this information (for example; where the retrieval time is unknown) and that there should be some flexibility in these circumstances to allow patients the optimal chance of availing of an available organ.

airports/passport details related to the transfer process i.e. prior to the call being received from the Transplant Co-ordinator

Recommendation 11:
That as part of the information packs provided to paediatric patients who may require an air transfer; that consideration should be given to the provision of information related to all possible air transportation options including helicopter flight; this information might take the form of a Patient Information Leaflet/DVD etc.

Recommendation 12:
All patients on the transplant waiting list should receive a copy of all relevant information/advice leaflets prepared by Our Lady's Children's Hospital.

2. Apology:

The Health Service Executive would like to apologise to Ms Mc G and her family for the events that occurred on the 2nd July 2011.

We acknowledge that their experience on the 2nd July was devastating.

The willingness of Ms M G's family to share their experience was invaluable in allowing this investigation to learn from their experience and in helping to make recommendations to improve the arrangements in place for transferring patients on the liver transplant list to the United Kingdom in the future.

3. Methodology:

This is the report of the investigation undertaken by the Health Service Executive of an incident that occurred during the evening of Saturday 2nd July related to the transfer of a fourteen year old girl from Co Leitrim to Kings College Hospital London to undergo a liver transplant procedure[4].

Due to a delay in organising the appropriate transport to effect the transfer of Ms M Mc G and her parents within the time-frame required Ms Mc G and her family were informed that she should not travel to London to undergo the liver transplant procedure.

The organ was subsequently transplanted into another patient

This investigation and preparation of the report was commissioned by the Health Services Executive Serious Incident Management Team.

The investigation was undertaken using the methodology for Incident Reviews outlined in the HSE Toolkit of Documentation to Support Incident Management (May 2009) which is based on the London Protocol (2006) for systems analysis[5] an internationally recognised methodology for investigating adverse incidents in healthcare.

The reviewers who undertook this investigation were:

- Cora McCaughan, Head of the Health Services Executive Serious Incident Management Team.
- Annette Macken, Healthcare Risk Manager, Health Services Executive

While carrying out this investigation the reviewers examined relevant literature and documentation including the following:

- Time-lines prepared by the HSE National Ambulance Service Command and Control Centre.
- Time-line prepared by Emergency Medical Support Services (EMSS) and supplementary information supplied by EMSS.
- Report prepared by management at Our Lady's Children's Hospital Crumlin i.e. '*Sequence of events (contact between OLCHC Nursing Site Managers and EMSS/Ambulance Control/Patient Family) relating to the attempted transfer of Ms M McG to Kings College Hospital London on 02/07/2011'*
- Time-line and supplementary Information supplied by the Irish Coast Guard.
- Copies of policies, procedures, protocols and guidelines related to inter-agency arrangements for the transport of patients by air.

[4] All Irish children requiring a liver transplant are treated in Kings College Hospital London which operates one of the largest transplantation programmes in Europe. The hospital carries out more than 200 procedures every year.

[5] A systems analysis investigation is a structured investigation that aims to identify the systems cause(s) of an incident or complaint and the actions necessary to eliminate the recurrence of the incident or complaint or where this is not possible to reduce the likelihood of recurrence of such an incident or complaint as far as possible. Healthcare services carry out incident investigations using systems analysis to find out what happened, how it happened, why it happened, what the organisation can learn from the incident and what changes the organisation should make to prevent it happening again.

- Irish Aviation Rules and Regulations
- Chronology of events prepared by Kings College Hospital London.
- Relevant literature.

In addition interviews were undertaken with the individuals involved in the events of the evening of the 2nd July related to the failed attempt to transfer Ms Mc G to London; and representatives from the agencies and/or organisations involved in the provision of emergency air transport arrangements for patients from Ireland to the United Kingdom.

A total of 19 people were interviewed as part of the investigation.

Those interviewed included:

- Parents of Ms Mc G.
- Representatives from the HSE National Ambulance Service.
- Senior Managers from Our Lady's Hospital Crumlin.
- Site Nursing Managers from Our Lady's Hospital Crumlin.
- Representatives from the Irish Coast Guard.
- Directors from Emergency Medical Supply Services Company.
- Representatives for the Liver Transplant Service, Kings College Hospital London.
- Representative from the European Air Charter Company.
- Representative from the HSE Commercial Unit.

The interviews were conducted by the two reviewers; the interviews were conducted in a manner that aimed to ensure that the optimal levels of information were obtained whilst ensuring that the individuals being interviewed were treated with dignity and respect.

All information gathered during the documentation/literature review and interview stages of the investigation process were treated confidentially. Information gathered was maintained securely, electronic documents were password protected and codes have been used to replace the names of individuals involved in the incident.

On completion of the interview and documentation/literature review process a Draft Report was prepared; the Draft Report was shared with all of those individuals who were interviewed as part of the investigation to ensure that the report was factually accurate; amendments were made to correct any erroneous information contained in the report. The Draft report identified recommendations to address those issues which were identified as contributing to the incident and feedback was sought on the recommendations identified. On this basis the Final Report of the investigation was developed.

The Health Service Executive and in particular the Serious Incident Management Team wishes to thank the family of Ms Mc G for their patience and understanding in relation to the Health Service Executives investigation of this incident and the staff of the HSE and the representatives from the other agencies/organisations who participated in this review for their invaluable contribution to the process.

4. Background to the Incident:

Details provided in this report have been obtained from review of the relevant documentation and interviews with the relevant HSE, EMSS, OLCHC, Irish Coast Guard and Kings College Hospital London staff and the parents of Ms Mc G.

Ms Mc G is a fourteen year old girl from Co Leitrim who has been awaiting a liver transplant for the past 11 months. In April 2011 Ms Mc G was placed on the priority list for liver transplant by the clinical team providing care to her from Kings College Hospital.

At 19.20 hours on Saturday 2nd July; Ms Mc G and her parents who were at their home in Co Leitrim were contacted by the Transplant Co-ordinator at Kings College Hospital London and informed that at donor organ from a non beating heart donor had become available and that Ms Mc G and family should prepare to make the journey to Kings College Hospital.

Emergency Medical Support Services[6] (EMSS) were also contacted by the Transplant Co-ordinator to co-ordinate the air transfer arrangements (in conjunction with the HSE Ambulance Control and Command Centre) to transport Ms Mc G and her family to London.

There followed a number of communications between EMSS, the Health Services Executive (HSE) National Ambulance Service Command and Control Centre, Nursing Administration at Our Lady's Children's Hospital Crumlin (OLCHC), the Irish Air Corps and the Irish Coast Guard as efforts were made to secure the appropriate air transport to transfer Ms Mc G and her family to London.

At approximately 21.45 hours the Irish Coast Guard identified that it would have a helicopter available flying from Sligo Airport to transport Ms Mc G and her family to London. Ms Mc G and her family were advised to travel to Sligo Airport.

When Ms Mc G and her family arrived at Sligo Airport they were informed that the flight time to London would be approximately four hours.

This information was communicated to the Transplant Co-ordinator at Kings Hospital London; the Transplant Co-ordinator advised that Ms Mc G and her family should not proceed on the journey to London as by the time that they would arrive in London that the time-frame for transplant of the available organ would have passed.

Ms Mc G and her family returned to their home and the liver was transplanted to another patient on the transplant waiting list.

[6] Emergency Medical Support Services (EMSS) is a private company that was established to provide emergency medical team transport within Ireland and to co-ordinate any transport services required outside the country especially in the U.K and Europe.

5. The chronology of events has been established as follows:

Saturday 2nd July:

17.50 hours (Kings College Hospital record):
The on-call Transplant Co-ordinator at Kings College Hospital London (Ms X) was notified by the on-call Specialist Nurse for Organ Donation that a donor organ from a non-beating heart donor[7] was being offered for potential transplantation. The Transplant Co-ordinator documented the key information required i.e. the donor's age, weight and medical history etc.

18.20 hours (Kings College Hospital record):
The Transplant Co-ordinator spoke to the on call Transplant Surgeon for Paediatrics and gave him the details related to the donor organ being offered.

The on-call Transplant Surgeon stated that he would accept the organ.

18.30 hours (Kings College Hospital record):
The Transplant Co-ordinator updated the on-call Transplant Surgeon for Adults as is the standard practice at Kings College Hospital.

19.10 hours (Kings College Hospital record):
The Specialist Nurse for Organ Donation spoke to the Transplant Co-ordinator and informed her that consent from the Coroner to commence the organ retrieval process was still awaited.

The Transplant Co-ordinator informed the Specialist Nurse for Organ Donation that the intended recipient of the organ i.e. Ms Mc G was five hours away from the hospital and that the Transplant Co-ordinator would need to know as soon as possible once consent had been given.

The Transplant Co-ordinator informed the Specialist Nurse for Organ Donation that arrangements would be made to transfer Ms Mc G to Kings College Hospital prior to the commencement of the retrieval procedure.

19.15 hours (Kings College Hospital record):
The Specialist Nurse for Organ Donation contacted the Transplant Co-ordinator to tell her that the Coroner had given consent.

19.20 hours:
It is the recollection of Ms Mc G's mother i.e. Mrs Mc G that she received a telephone call from the Transplant Co-ordinator at Kings College Hospital London to inform Mrs Mc G that a donor liver had become available and that she should prepare to travel to London with her daughter.

[7] The Transplant Service at Kings College Hospital informed the reviewers that the procedure when a non-beating heart becomes available is that the surgical retrieval team attends the hospital where the donor patient is located. Consent for the donation of organs will have already been obtained from the next of kin of the donor patient. Medical treatment is withdrawn and once it has been confirmed that the donor patient's heart has stopped and death is confirmed the Kings College Hospital surgical teams can commence the retrieval process.

Mrs Mc G recalls that the Transplant Co-ordinator informed her that the organ was being donated by a non-beating heart donor.

Mrs Mc G recalls that the Transplant Co-ordinator asked her if she would accept the organ for her daughter and Ms Mc G indicated that she would.

Mrs Mc G recalls that during the telephone conversation with the Transplant Co-ordinator that the issue of both parents travelling with their daughter came up and that the Transplant Co-ordinator indicated that it might not be possible for both parents to travel. Mrs Mc G recalls that she informed the Transplant Co-ordinator that to her knowledge i.e. Mrs Mc G's that it was acceptable for both parents to travel.[8]

Mrs Mc G recalls that the Transplant Co-ordinator indicated that she would check this out with the Transplant Consultant on call and that she would come back to Mrs Mc G after this.

The Transplant Co-ordinator at Kings College Hospital stated that she had informed Mrs Mc G that she would check this information with the Transport Company.

Mrs Mc G recalls that the Transplant Co-ordinator rang back shortly afterwards to confirm that it was in order that both parents would accompany their daughter.

Mr and Mrs Mc G informed their daughter of the call and they immediately began making preparations to travel.

Mr and Mrs Mc G indicated that they had suitcases packed and ready to go since Ms Mc G's name was first placed on the transplant list 11 months previously; and that they only needed to include a few additional items and that they were then ready to leave the house to travel to the airport.

19.27 hours (EMSS log)[9]:
It is the recollection of the Transplant Co-ordinator from Kings College Hospital that she contacted EMSS at 19.30 hours and that she contacted Ms Mc G's parents at around the same time to inform them that a donor liver had become available.

The EMSS dispatcher on duty, EMSS Dispatcher 1 stated that he received a pager message.

The record of this pager message from VoxPro Communications indicates that the message was as follows:

[8] Mrs McG indicated that she was aware that it was acceptable for both parents to travel from her involvement in a Support Group for families awaiting transplants and from contacts with other parents who had children awaiting a transplant.

[9] There is a time discrepancy between the logs of telephone communication maintained by EMSS and the HSE Ambulance Service Command and Control Centre; the time difference is of seven to eight minutes. The EMSS log shows times of seven to eight minutes behind those recorded by HSE Ambulance Service Command and Control Centre. Consequently where the HSE and EMSS have logs that relate to the same calls; the times recorded by the HSE Ambulance Service Command and Control Centre and the EMSS log have both been entered in this report. There was also a discrepancy in times related to records made by the HSE Ambulance Service Command and Control Centre and OLHSC; Sequence of Events Report and between times recorded by OLHSC and Kings College Hospital; therefore all recorded times have been entered where a discrepancy was noted. Records of calls made have been placed in the Chronology in the sequential order established notwithstanding discrepancies in the times recorded by the different agencies.

'Please contact Ms X re transfer of patient thanks'.

The contact details for Ms X were included in the pager message.

EMSS Dispatcher 1 indicated that based on the message details he did not know that the message had been sent by the Liver Transplant Co-ordinator from Kings College Hospital or that the message related to Ms Mc G.

19.43 hours (EMSS log):
EMSS Dispatcher 1 telephoned the number from the pager message and spoke to the Transplant Co-ordinator (Ms X) at Kings College Hospital who gave him the details in relation to the organ i.e. a liver that had become available; and details related to the recipient in Ireland i.e. Ms Mc G.

EMSS Dispatcher 1 stated that he was not informed that the donor was a non-beating heart donor.[10]

EMSS Dispatcher 1 also stated that when he asked the Transplant Co-ordinator what the time-line was in relation to Ms Mc G's arrival at Kings College Hospital that he was told *'as soon as possible'*.

This was confirmed by the representatives from the Liver Transplant Team at Kings College interviewed as part of the review. The representatives from the Liver Transplant Service indicated that it is the standard practice that the Transplant Co-ordinator instructs that the patient should get to the hospital as soon as is possible and that the Transplant Co-ordinator then awaits confirmation related to the expected arrival time of the patient.

19.46 hours (EMSS log):
EMSS Dispatcher 1 telephoned the HSE Ambulance Service Team Leader in Control i.e. Team Leader in Control 1 in the HSE National Ambulance Service Command and Control Centre based in Townsend Street Dublin[11]; the records from HSE Ambulance Control indicate that the mobile call 'broke down'.

19.48 hours (EMSS log):
EMSS Dispatcher 1 telephoned Team Leader in Control 1 again and informed him that he had received communication from the Transplant Co-ordinator at Kings College Hospital in relation to a donor liver that was being made available to Ms Mc G.

The HSE records related to this telephone call state that Team Leader in Control 1 requested information as to the time-frame 'on this call' and that EMSS Dispatcher 1 responded that he had been informed by the Transplant Co-ordinator at Kings College Hospital that it was *'as soon as possible*.

Team Leader in Control 1 recalls that he asked again if there was a time-frame available and that EMSS Dispatcher 1 indicated that he had asked the Transplant Co-ordinator what was the latest time by which Ms Mc G could arrive at Kings College Hospital but that EMSS Dispatcher 1 responded that he had been informed that Ms Mc

[10] The reviewers were informed by the Kings College Hospital representatives that it is not their practice to inform transport operators if the organ is from a non beating heart donor or a beating heart donor as they might not be aware of this terminology.
[11] The Ambulance Control and Command Centre in Dublin responds to 999 calls made in the Dublin area with the Dublin City Fire Brigade; in addition the HSE Ambulance Control and Command Centre also responds to calls made from the area between Balbriggan and Gorey and Portlaoise.

G needed to be at the hospital as soon as possible and that he had been unable to ascertain any further details around a time-frame.

EMSS Dispatcher 1 confirmed with Team Leader in Control 1 that Team Leader in Control 1 would contact the Air Corps and the Irish Coast Guard to ascertain if either agency had an aircraft available to transport Ms Mc G to the United Kingdom[12].

Team Leader in Control 1 recalls that he asked EMSS Dispatcher 1 if there was 'a jet on standby' and that EMSS Dispatcher 1 responded 'not at this point'.

It is recorded that Team Leader in Control 1 stated that he would contact EMSS Dispatcher 1 again in 15 minutes.

19.50 hours (EMSS log):
EMSS Dispatcher 1 contacted Ms Mc G's family to update them on the communication that had been received from the Transplant Co-ordinator at Kings College Hospital and to update them on the plans to transport Ms Mc G to London.

Mr Mc G recalls that he requested details related to the plans to transport the family to the United Kingdom but that EMSS Dispatcher 1 indicated that he could not give any details and that he would get back to him.

19.57 hours (HSE records):
Team Leader in Control 1 telephoned the General Duty Officer at Casement Aerodrome, Baldonnel i.e. General Duty Officer 1 and informed General Duty Officer 1 that he i.e. Team Leader in Control 1 was requesting assistance from the Air Corps to transfer a Priority 1[13] patient on the transplant list from Leitrim to London.

Team Leader in Control 1 told General Duty Officer 1 that to his knowledge that the nearest airport to Ms Mc G' s location was Knock Airport and the General Duty Officer agreed that this was probably the case.

General Duty Officer 1 informed Team Leader in Control 1 that unfortunately that the Air Corps had no aircraft available at this time.

Team Leader in Control 1 stated that that was all he needed to know and that he would now move to the second part of the process i.e. to contact the Irish Coast Guard to see if the Coast Guard had an available aircraft.

Team Leader in Control 1 informed the reviewers that the contemporaneous and date/time stamped record of this telephone call states that General Duty Officer 1 informed him that one aircraft was unserviceable i.e. 'the CASA', that another aircraft i.e. 'the 139''[14] was 'tied up' until 21.30 hours dealing with the transfer of a spinal injury patient and that it could not be used at that time as the helicopter could not fly over the sea and that one aircraft was out of the country on a Presidential flight.

[12] It is the standard policy that the HSE Ambulance Service acts as the conduit between EMSS and the State agencies in the air transfer of patients to the United Kingdom to undergo paediatric liver transplant procedures.
[13] The reviewers were informed that a Priority 1 transfer means that the Ambulance Service must have confirmation within 15 minutes that an aircraft is available to take off within one hour.
[14] '139' refers to an Augusta Westland 139 helicopter.

It is General Duty Officer 1's recollection that he did offer the aircraft undertaking the Presidential flight i.e. the G4; albeit with an Estimated Time of Departure (ETD) of 23.30 hours.

Team Leader in Control 1 stated that the General Duty Officer informed him that he would check to see if there was another aircraft available elsewhere and that he would contact Team Leader in Control 1 when he had checked this.

19.57 hours (EMSS log):
EMSS Dispatcher 1 contacted the Air Ambulance agent based in the United Kingdom that EMSS use and requested that the agent would source a private air ambulance. EMSS Dispatcher 1 stated that the aircraft charter agent that EMSS uses to transport transplant patients only sources designated air ambulances and not any other type of aircraft.

20.00 hours approximately:
Mr Mc G recalls that he received a telephone call from Nursing Administration at OLHCC enquiring how Ms Mc G was, if she was fit to travel and if any medical support was required for the journey to the United Kingdom.

Mr Mc G confirmed that Ms Mc G was well enough to travel and that no support was required.

20.07 hours (HSE log):
Team Leader in Control 1 received a telephone call from General Duty Officer 1 in Casement Aerodrome, Baldonnel.

Team Leader in Control 1 stated that General Duty Officer 1 informed Team Leader in Control 1 that as things stood that the Air Corps had nothing available that was suitable to transport Ms Mc G and her family.

General Duty Officer 1 explained that there were only two aircraft available one of which was a helicopter that was unsuitable to undertake the journey and the other 'the G4' i.e. the government jet was out of the country in Nice and that it was expected to return to Casement Aerodrome at around 22.30 hours.

As stated previously it is General Duty Officer 1's recollection that he indicated that the government jet would be available with an estimated departure time of 23.30 hours and that Team Leader in Control 1 had indicated that this was too late.

While Team Leader in Control 1 confirms that General Duty Officer 1 informed him that the government jet was in Nice and that it was expected back at 22.30; he informed the reviewers that his contemporaneous and date/time stamped record of this telephone conversation does not make any reference to the government jet being available with an ETD of 23.30 hours.

Team Leader in Control 1 also recalls that he had a very brief discussion with General Duty Officer 1 about a patient with a spinal injury in Kerry who was being air-lifted by the Air Corps.

Team Leader in Control 1 recalls that General Duty Officer 1 expressed regret that he could not provide the assistance required and Team Leader in Control 1 thanked General Duty Officer 1 for his help and indicated to General Duty Officer 1 that he had done his best i.e. General Duty Officer 1 and that he (Team Leader in Control 1) would now move on to contacting the Coast Guard to request their assistance.

Team Leader in Control 1 recalls that at the end of the telephone conversation that he indicated to General Duty Officer 1 that he hoped that he would not have to come back to him.

20.08 hours (HSE log):
The call log prepared by the HSE Ambulance Command and Control Centre states that Team Leader in Control 1 contacted the National Maritime Operations Centre[15] (NMOC) in Dublin and having identified himself he informed the Search and Rescue (SAR) Mission Controller on duty that there was a Priority 1 emergency liver transplant patient, 'a child' requiring transfer to London and that the Air Corps had no aircraft available to effect the transfer.

The SAR Mission Controller informed Team Leader in Control 1 that similarly that the Coast Guard did not have an aircraft available in Dublin at this time.

Team Leader in Control 1 informed the SAR Mission Controller that the patient was presently in Co Leitrim; the SAR Mission Controller responded that Coast Guard personnel had gone to 'pick-up' a replacement helicopter for the Dublin base but that this aircraft would not be available until after midnight. [16]

Team Leader in Control 1 indicated that this would be too late and that he would move on to source an aircraft by another means.

The SAR Mission Controller informed the reviewers that on this basis he understood that there were other air transport options available to effect the patient's transfer to the United Kingdom.

20.10 hours (HSE log):
Team Leader in Control 1 contacted the HSE Ambulance Service Education and Competency Assurance Officer[17] who was off-duty and informed him that the transfer of a patient on the transplant waiting list was in process and that the Air Corps and the Irish Coast Guard had both indicated that they did not have an aircraft available to effect the transfer.

Team Leader in Control 1 indicated that the reason that he had made this telephone call was that he had an 'uneasy feeling' that the SAR Mission Controller in Dublin that Team Leader in Control 1 had spoken to had not understood what was meant by a 'Priority 1 transfer'.

[15] The National Maritime Centre (NMOC) is the Control Centre of the Irish Coast Guard. The Irish Coast Guard discharges the State's responsibility for Maritime Search and Rescue (SAR). The Coast Guard has six medium lift SAR helicopters with four at constant readiness based at Dublin, Shannon, Sligo and Waterford airports. The Dublin NMOC staff at night comprise of one SAR Mission Controller and one Watch Officer who coordinate all SAR response activity and shipping traffic between Lough Foyle and Galway Bay and a variety of other Coast Guard activities e.g. pollution and casualty response and surveillance activity throughout the entire Irish Zone of Responsibility out to 200 nautical miles.

[16] The Irish Coast Guard stated that July 2011 was on record as the month with the highest amount of taskings for the Coast Guard helicopters at 59 heli missions; 39.1 mission hours at Sligo with over 15 missions and 16 mission hours over 13 missions at Dublin

[17] The reviewers were informed that the HSE Ambulance Service Education and Competency Assurance Officer was the HSE staff member who had initiated and been most involved in the development of the joint protocols that had been put in place with the Air Corps, the Irish Coast Guard Service and the HSE regarding the air transfer of transplant patients to the United Kingdom.

Team Leader in Control 1 indicated that it would not be normal practice to alert the Education and Competency Assurance Officer who was off duty in the event of an air transfer of a patient; but that the Education and Competency Assurance Officer was accessible to be contacted if issues related to air transfers were emerging.

20.11 hours (HSE log)/20.00 hours (EMSS log)
Team Leader in Control 1 contacted EMSS Dispatcher 1 and informed him that neither the Air Corps nor the Irish Coast Guard had an available aircraft to transport Ms Mc G and her family to London and that EMSS should now proceed to organise a private aircraft to transport Ms Mc G and her family to the United Kingdom.

The records indicate that EMSS Dispatcher 1 responded that he had been trying to organise an aircraft with their United Kingdom agent but that the agent had not been able to source an aircraft so far, EMSS Dispatcher 1 indicated that the difficulty was due to the fact that the Wimbledon Tennis Tournament was taking place.

20.02 hours (EMSS log)/20.07 hours (Our Lady's Hospital for Sick Children's (OLCHC) Sequence of Events)[18]:
The telephone call log prepared by EMSS states that Nursing Administration in OLCHC were contacted and updated.

The telephone call log from OLCHC states that the time of this call was 20.07 hours.

The report prepared by OLCHC states that Nursing Site Manager 1 was contacted by EMSS Dispatcher 1 who informed her that a liver had become available for Ms Mc G who was awaiting a transplant; and that EMSS Dispatcher 1 informed Nursing Site Manager 1 that he had already contacted HSE Ambulance Control who had informed him that the Air Corps and the Irish Coast Guard were unable to assist in transferring Ms Mc G to London.

20.09 hours (EMSS log):
The call log prepared by EMSS states that a further urgent request was made to the United Kingdom agent for access to an aircraft to effect Ms Mc G's transfer.

20.15 hours (OLCHC: Sequence of events):
It is documented that Nursing Site Manager 1 telephoned the HSE Ambulance Control Centre and left a message requesting that HSE Ambulance Control would return the telephone call.[19]

20.20 hours (Kings College Hospital records):
The Specialist Nurse for Organ Donation at Kings College Hospital rang the Transplant Co-ordinator and informed her that the start-time for the retrieval procedure was scheduled for 22.00 hours; when treatment being provided to the donor patient would be withdrawn.

[18] The reviewers were informed that the Sequence of Events report prepared by OLCHC staff was based on the recollections of the staff following the event and as such does not constitute a full record of every conversation/discussion that occurred.
[19] It was confirmed that Nursing Site Manager 1 was on duty in the Nursing Administration Office on the evening of 2nd July. Nursing Site Manager 1's shift was due to finish at 21.00 hours and she was due to hand-over to Nursing Site Manager 2 at 20.30 hours. Nursing Site Manager 2 arrived on duty at 20.10 hours and Nursing Site Manager 1 stayed on duty until 22.30 hours to assist in the organisation of Ms Mc G's travel arrangements.

It is documented that the Transplant Co-ordinator reminded the Specialist Nurse for Organ Donation that the recipient i.e. Ms Mc G was five hours away and that efforts were being made to get her to Kings College Hospital.[20]

20.20 hours (EMSS log)/20.30 hours (Kings College Hospital records):
EMSS Dispatcher 1 contacted the Transplant Co-ordinator at Kings College Hospital and informed her that there was no available aircraft from Ireland to effect Ms Mc G's transfer to London; EMSS Dispatcher 1 made a request that Kings College Hospital would source an aircraft to effect the transfer.

It is documented that the Transplant Co-ordinator informed EMSS Dispatcher 1 that she would contact M & L i.e. a company that Kings College Hospital use to provide transport for their retrieval teams and unaccompanied organs, to see if they had an aircraft available.

20.29 hours (**OLCHC; Sequence of Events and Telephone Call Log):**
Nursing Site Manager 1 telephoned EMSS Dispatcher 1 to update him on the current situation; EMSS Dispatcher 1 informed Nursing Site Manager 1 that he was experiencing difficulty in sourcing an aircraft to transfer Ms Mc G to London as 'retrieval teams were in Coleraine'.

EMSS Dispatcher 1 indicated that it was the United Kingdom Air Ambulance agent who had informed him that a number of aircraft were involved in organ retrievals that evening and that from recollection that the agent had indicated that some of these retrieval teams were in the Coleraine area.

It is documented by the staff from OLCHC that EMSS Dispatcher 1 informed Nursing Site Manager 1 that he was linking with the Royal Air Force (RAF) and with the Liver Transplant Team at Kings College Hospital to seek assistance with Ms Mc G's transfer.

20.31 hours (HSE log)/20.20 hours (OLCHC; Sequence of Events and Telephone Call log):
Team Leader in Control 1 received a telephone call from Nursing Site Manager 2 in relation to the transfer of Ms Mc G.

Team Leader in Control 1 confirmed to Nursing Site Manager 2 that he had been unable to source an aircraft from either the Air Corps or the Irish Coast Guard; he informed Nursing Site Manager 2 that the Irish Coast Guard had informed him that the Dublin helicopter was 'down' and that the Air Corps had told him that the only available aircraft was out of the country with the President.

The records indicate that Nursing Site Manager 2 stated that she would need an email from Team Leader in Control 1 to confirm that neither the Air Corps nor the Irish Coast Guard had an aircraft available to transport Ms Mc G to London.

Team Leader in Control 1 indicated that he would forward the email as requested immediately and he asked for Nursing Site Manager 2's email address which she gave him.

[20] It has been reported that Non Heart Beating Donor liver grafts are more susceptible to cold ischemia as these are preceded by a period of warm ischemia and that every effort should be made to minimize cold storage time. Reference: Schon MR, Kollmar O, Wolf S, et al. Liver transplantation after organ preservation with normothermic extracorporeal perfusion. Ann Surg. 2001;233:114–123. [PMC free article] [PubMed]

20.32 – 20.33 hours (OLCHC Telephone call log):
Nursing administration staff at OLCHC made two calls to the land-line at European Air Charter that directed them to a mobile number.

The call log indicates that the Nursing Administration staff contacted Ms Y on her mobile at 20.33 hours.

Nursing Site Manager 2 spoke to Ms Y at European Air Charter with a view to sourcing a private aircraft to take Ms Mc G and her family to London.

Ms Y informed Nursing Site Manager 2 that an available aircraft would need to be sourced from the United Kingdom and that if none was available from the United Kingdom that she would have to go to the European market to source an aircraft.

Nursing Site Manager 2 recalls that she requested an aircraft that would land at Knock Airport as she believed that this was the nearest airport to Ms Mc G's family home, Nursing Site Manager 2 indicated that she was not aware that there was an airport at Sligo.

Ms Y informed Nursing Site Manager 2 that any request to land an aircraft at Knock Airport would require a request being made to have the airport re-opened as it was closed at this time.[21]

It is Ms Y's recollection that within a ten minute period that she had confirmation from Nursing Site Manager 2 that it was in order for Ms Y to proceed in sourcing an aircraft.

Ms Y indicated that she would begin to try and source an aircraft.

The report prepared by OLCHC also states that at this time that the hospital *'was in regular contact'* with Team Leader in Control 1 and that Team Leader in Control 1 had stated;

'That he had requested assistance from the Western Coastguard based at Malin Head and that he would have confirmation by 22.00 hours.'[22]

20.35 hours (OLCHC; Sequence of Events):
Nursing Site Manager 2 received the email from Team Leader in Control 1 confirming that there was no aircraft available from the Air Corps or the Irish Coast Guard.

20.37 hours (EMSS log):
EMSS Dispatcher 1 received a telephone call from the UK Air Ambulance agent; the agent informed EMSS Dispatcher 1 that they could not source an aircraft within the time required[23].

[21] There is a fee levied to re-open Knock Airport for chartered flights outside of its standard operating times. Ms Y stated that Knock Airport had subsequently indicated that they would waive the fee to open the airport when they heard the request to open the airport was to accommodate a flight transporting a child to undergo a transplantation procedure.
[22] It was noted that there is a discrepancy related to the times referred to in this entry; as no request had been made to the Western Coast Guard Malin Head at this time.
[23] EMSS confirmed to the reviewers that this assertion was made based on the experience of EMSS and the Air Ambulance agent related to the previous transfers of liver transplant patients undertaken (for beating heart donations) where the time period for transfer was between 8 – 10 hours.

The UK Air Ambulance agent indicated to EMSS Dispatcher 1 that in the event that the Transplant Co-ordinator from Kings College Hospital were to declare that the transfer was of a 'life or death' priority; that the RAF could be requested to provide assistance.

20.40 hours (EMSS log):
EMSS Dispatcher 1 contacted the Transplant Co-ordinator at Kings College Hospital and relayed the information from the UK Air Ambulance agent in relation to the possibility of declaring the transfer as a 'life or death' priority in order to seek assistance form the RAF.

It is EMSS Dispatcher 1's recollection that the Transplant Co-ordinator indicated that she would discuss this possibility with the Consultant on call at Kings College Hospital and that she would contact EMSS Dispatcher 1 to let him know if this could be done.

20.43 hours (EMSS log):
The Transplant Co-ordinator at Kings College Hospital telephoned EMSS Dispatcher 1 and confirmed that assistance to effect Ms Mc G's transfer could be sought from the RAF.

20.44 hours (EMSS log):
EMSS Dispatcher 1 contacted the UK Air Ambulance agent and requested that they would seek assistance from the RAF.

EMSS Dispatcher 1 indicated that the UK Air Ambulance agent that EMSS use has regular contact with the RAF in relation to the organisation of air transport for patients.

20.45 hours:
Ms Y from European Air Charter sent a text to Nursing Site Manager 2 to inform her that Ms Y had located a jet.

Ms Y recalls that she indicated that she was awaiting confirmation that there was a crew available to prepare and fly the aircraft and that Knock Airport could be opened to accommodate the aircraft.

Ms Y recalls that the market was very busy and that there were very few aircraft available for charter and that all available air ambulances were already in the air that evening.

20.46 hours (EMSS log):
EMSS Dispatcher 1 contacted Ms Mc G's parents and updated them on the situation regarding the transfer of Ms Mc G to London.

Mr Mc G stated that following this telephone call and when he realised that there might be difficulties related to securing an aircraft that he began to start thinking of making his own arrangements.

He stated that he had heard about a helicopter charter company in Galway and that he located a contact telephone number for the company following an internet search.

21.00 hours (Kings College Hospital record):
The Transplant Co-ordinator contacted the Transplant Surgeon for Paediatrics to update him on what was happening in respect of Ms Mc G's transfer to Kings College Hospital.

The Transplant Co-ordinator also contacted M&L and suggested that the RAF should be contacted in order to seek their assistance to transfer Ms Mc G to the United Kingdom.

21.04 hours (HSE log)/ 20.57 hours (EMSS log):
Team Leader in Control 1 received a telephone call from EMSS Dispatcher 1.

EMSS Dispatcher 1 informed Team Leader in Control 1 that there was still no private aircraft available to effect Ms Mc G's air transfer.

EMSS Dispatcher 1 asked Team Leader in Control 1 which of the Coast Guard helicopters was out of commission and Team leader in Control 1 confirmed that he had been informed that it was the helicopter based in Dublin.

EMSS Dispatcher 1 recalls that he asked Team Leader in Control 1 if the Sligo helicopter was available and that Team Leader in Control 1 informed him that he had been told by the Coast Guard that there were no aircraft available.

Team Leader in Control 1 indicated that EMSS Dispatcher should continue trying to source a private aircraft; EMSS Dispatcher 1 replied that there was *'not a hope'* as three retrieval teams were being transported from Coleraine and any other available aircraft had been taken over to transport passengers to Wimbledon and that that was why he enquiring about the availability of the helicopter based in Sligo.

EMSS Dispatcher 1 indicated that he made this enquiry to Team Leader in Control 1 as EMSS Dispatcher 1 stated that he 'had some knowledge of the Coast Guard' and that he knew there was a Coast Guard helicopter based in Sligo Airport.

Team Leader in Control 1 stated that at this time that he enquired again about the timeline related to the transfer of Ms Mc G and that he was informed by EMSS Dispatcher 1 that Kings College Hospital had not provided a timeline for the transfer.

Team Leader in Control 1 asked if it would be possible to use a commercial flight to transport Ms Mc G to London; however EMSS Dispatcher 1 indicated that it would take in the region of two and half hours for Ms Mc G and her family to travel from Co Leitrim to Dublin Airport.

Team Leader 1 in Control asked EMSS Dispatcher 1 if he had been in contact with Nursing Site Manager 2 at OLCHC; EMSS Dispatcher 1 indicated that he had not spoken to Nursing Site Manager 2 but that he had been in contact with Nursing Site Manager 1 earlier in the evening.

EMSS Dispatcher 1 indicated that he would have to end the call as the Transplant Co-ordinator was trying to contact him.

Team Leader in Control 1 asked EMSS Dispatcher 1 to contact him again with a further update and EMSS Dispatcher 1 confirmed that he would do this.

21.01 hours (EMSS log):
EMSS Dispatcher 1 contacted the UK Air Ambulance agent and requested an update in relation to the request for assistance from the RAF; the Air Ambulance agent indicated that there was no update information available.

21.04 hours (OLCHC Telephone call log):
Nursing Administration tried to telephone EMSS Dispatcher 1 but did not get through.

21.04 hours (EMSS log)/21.06 (OLCHC Telephone call log):
EMSS Dispatcher 1 contacted Nursing Site Manager 1 and informed her that there was no Irish aircraft (either private or State owned) to effect Ms Mc G's transfer to London.

EMSS Dispatcher 1 also informed Nursing Site Manager 1 in relation to the possibilities that an aircraft might become available from the RAF; and that in addition that the possibility of sourcing an aircraft from the Coast Guard based in Sligo was being looked at.

EMSS Dispatcher 1 stated that Nursing Site Manager 1 informed him at this time that she had sourced an aircraft but that she was waiting for approval so that it could be used.

Nursing Site Manager 1 stated that she informed EMSS Dispatcher 1 that she was waiting for confirmation that an aircraft was available from European Air Charter and not that she was waiting for approval.

EMSS Dispatcher 1 indicated that this was the first time that he was aware that staff at OLCHC were also trying to source a private aircraft.

21.16 hours (EMSS log):
EMSS Dispatcher 1 stated that following a request received from Ms Mc G's father that he telephoned a private helicopter operator in Galway. EMSS Dispatcher 1 stated that this call was diverted.

EMSS Dispatcher 1 stated that he made two further telephone calls to the helicopter operator in Galway at 21.20 hours and 21.21 hours but that both calls were also diverted and that a call was eventually answered by a woman; EMSS Dispatcher 1 indicated that he spoke briefly to the woman but that she was unable to give details of the availability of a helicopter.

21.15 hours (OLCHC Telephone call log);
The call log states that Nursing Administration made a telephone call to EMSS Dispatcher 1 to update him on the situation.

21.17 hours (OLCHC call log):
Nursing Administration left a message on the Transplant Co-ordinator's pager requesting that she contact Nursing Administration.

21.23 hours:
The Director of the Irish Coast Guard stated that he was at home when he received a telephone call from the HSE Ambulance Education and Competence Assurance Officer.

The Ambulance Service Education and Competency Assurance Officer informed the Director of the Coast Guard that there was an issue about the availability of an aircraft to transfer a Priority 1 transplant patient to London and that the agencies involved in organising the transfer had been unable to source any available aircraft.

The Ambulance Service Education and Competency Assurance Officer asked the Director of the Coast Guard if there was a possibility that the Sligo Coast Guard helicopter might be available and if it could provide the assistance required.

21.27 hours (approximately):
The Director of the Coast Guard telephoned the second on call[24] for the Coast Guard and briefed him on the telephone call that he had received from the Ambulance Service Education and Competency Assurance Officer. The Director questioned if there were any West Coast missions in progress or developing maritime situations; and if it was possible to task the Sligo based helicopter for a London transfer.

On this basis it was confirmed to the reviewers that the Irish Coast Guard management had decided that subject to obtaining an update on the current maritime situation the Sligo Coast Guard helicopter would be made available to transfer Ms Mc G.

The second on call also confirmed that he expected the Dublin helicopter to be operational before midnight which would positively impact on overall national maritime cover.

The Director of the Coast Guard approved the mission subject to no developing maritime emergency.

The Director of the Coast Guard immediately telephoned the Ambulance Service Education and Competency Assurance Officer and informed him that the Sligo Coast Guard helicopter was going to be made available[25] to transfer Ms Mc G to the United Kingdom subject to a maritime situation update check.

21.27 hours (EMSS log):
The EMSS log states that HSE Ambulance Control Centre advised that the Irish helicopter based in Sligo was 'looking hopeful'.

21.30 hours (Kings College Hospital record):
The Transplant Co-ordinator received a telephone call from M&L who informed her that they were unable to source an aircraft at that time.

The Transplant Co-ordinator recalls that she contacted EMSS Dispatcher 1 to inform him of this fact and that he told her that similarly that he had been unsuccessful in sourcing an aircraft.

21.30 hours (OLCHC; Sequence of Events):
It is documented that Ms Y in European Air Charter contacted Nursing Site Manager 2 OLCHC to confirm that the company had sourced an aircraft from the United Kingdom which could fly Ms Mc G from Knock Airport or Dublin Airport.

Nursing Site Manager 2 stated that she was informed by Ms Y that the earliest approximate time of departure for this flight was 23.30 hours with an arrival time at Stanstead Airport of 00.35 hours approximately; and that it would take at least one hour to transfer Ms Mc G to Kings College Hospital via ambulance after landing at Stanstead Airport i.e. an estimated time of arrival of 01.35 hours at Kings College Hospital.

Ms Y recalls that she contacted Nursing Site Manager 2 and informed her that she had located an available aircraft that could fly into Knock or Dublin Airport and that could land at Stanstead or Heathrow Airport and that the crew were awaiting an instruction as to whether they 'should come in or not'.

[24] The second on call is the most senior manager on call for the Irish Coast Guard Service.
[25] The reviewers were informed that preparation would have to be undertaken prior to confirming the aircraft was available i.e. permission to be sought by the crew to land at a London airport etc.

Ms Y indicated that it was her understanding that the flight should land at Heathrow Airport.

Ms Y stated that this aircraft was based in Stanstead Airport and was a private jet owned by a business-man.

21.32 hours (EMSS log):
EMSS Dispatcher 1 contacted Ms Mc G's father and updated him that there was a possibility that an aircraft might be available from the Coast Guard and to prepare to travel to Sligo Airport.

Mr Mc G recalls that EMSS Dispatcher 1 told him that he was still trying to make the appropriate arrangements and that he would contact him again to update him on what was happening.

21.35 hours (EMSS log):
EMSS Dispatcher 1 contacted Nursing Site Manager 2 and updated her on the changed situation related to the availability of an aircraft i.e. that there was a possibility that an aircraft might be available from the Coast Guard.

Nursing Site Manager 2 stated that at this time she further updated EMSS Dispatcher in relation to the private aircraft from European Air Charter.

21.51 hours (HSE log)/(Irish Coast Guard log):
The Irish Coast Guard second on call telephoned the Ambulance Service Education and Competency Assurance Officer and confirmed that the Sligo Coast Guard helicopter was available and was about to be tasked.

Team Leader in Control 1 received a telephone call from EMSS Dispatcher 1 to inform him that there was a local Landing Zone at a GAA pitch near to Ms Mc G's family home and that EMSS Dispatcher 1 would provide Global Positioning Satellite (GPS) co-ordinates shortly.

EMSS Dispatcher 1 informed Team Leader in Control 1 that the Air Corps had landed at this site recently.

EMSS Dispatcher 1 stated that Mr Mc G had provided this information to him.

Mr Mc G confirmed that an Air Corps aircraft had landed at the Landing Zone previously.

21.52 hours (HSE log):
Team Leader in Control 1 received a call from the SAR Mission Controller at the Irish Coast Guard (NMOC) in Dublin.

The SAR Mission Controller requested clarification as to whether the SAR Mission Controller had spoken to the Team Leader in Control earlier; Team Leader in Control 1 confirmed that he had spoken to the SAR Mission Controller earlier.

The SAR Mission Controller asked for Team Leader in Control 1's name and indicated that he had received a telephone call from his superior i.e. the second on call related to the earlier call when the SAR Mission Controller had indicated that there was no Coast Guard aircraft available in Dublin.

Team Leader in Control 1 provided the information requested and informed the SAR Mission Controller that he had been following the standard practice of informing his senior manager when he had not been able to source an Air Corps or Coast Guard aircraft.

The SAR Mission Controller asked 'where is the child now' and Team Leader in Control 1 indicated that Ms Mc G was still in Co Leitrim and that she was still awaiting transport.

The SAR Mission Controller indicated that the Coast Guard should be in a position to help.

Team Leader in Control 1 stated that a jet had been sourced but that it was in Europe and would take some time to organise and therefore that he needed to know if there was a possibility that the Coast Guard might be able to assist in transporting Ms Mc G before confirmation was given with regard to securing the jet.

Team Leader in Control 1 recalls that he asked the SAR Mission Controller if he could confirm that the Coast Guard helicopter could effect the transfer.

The SAR Mission Controller indicated that he would have to come back to him to confirm this but that he would be back in contact shortly.

21.54 hours (HSE log)/21.57 hours (OLCHC; Sequence of Events):
Team Leader in Control 1 contacted Nursing Site Manager 2 and informed her that there was a possibility that an Irish Coast Guard helicopter might be available to transport Ms Mc G to London and that he would contact her again as soon as it was possible to confirm the details of this transfer.

Team Leader in Control 1 informed Nursing Site Manager 2 that he would be providing the Irish Coast Guard with landing coordinates close to Ms Mc G's home.

The HSE Ambulance Service record related to this communication states that Team Leader in Control 1 informed Nursing Site Manager 2 that they were tight on time but that they were doing their best.[26]

There is a variance between the Ambulance Service records related to this telephone call and the documentation prepared by OLCHC.

Nursing Site Manager 2 recalls that at some stage during her telephone calls to the Ambulance Control and Command Centre that she was informed by Team Leader in Control 1 that arrangements to transfer Ms Mc G via the Irish Coast Guard helicopter were in place and that the collection point was Sligo Airport and that the Expected Time of Departure (ETD) was 22.45 hours.

21.56 hours (Irish Coast Guard log):
The Coast Guard Duty Captain based at Sligo was contacted and alerted by the NMOC that an aircraft was required to transport a patient to London.

[26] Team Leader in Control 1 confirmed that although he had not been provided with a time-frame related to Ms Mc G's transfer to Kings College Hospital London that he was operating on the basis that this was a liver transplant and on the basis of the previous time-lines for transfers where he had been involved. Team Leader in Control 1 confirmed that his intention was to get the family mobilised to the nearest location with access and egress points whilst awaiting confirmation of flight details related to the resource available at the earliest time.

The Duty Captain contacted the Coast Guard helicopter crew to attend the base; this is because the Coast Guard helicopter crew stand-down from 15 minutes notice to 45 minutes notice at 21.00 hours (i.e. they must be able to return to the base and be airborne within 45 minutes following receipt of a call) and therefore can go to their homes or accommodation until called to the base.

21.58 hours (HSE log):
Team Leader in Control 1 received a telephone call from the Ambulance Service Education and Competency Assurance Officer who informed Team Leader in Control 1 that he had been in contact with the Director of the Coast Guard and that the Director had informed him that the Coast Guard would do all that they could to provide a helicopter to transfer Ms Mc G to the United Kingdom.

The Education and Competency Assurance Officer requested that Team Leader in Control 1 contact the Irish Coast Guard (NMOC) immediately and that the Coast Guard would then organise the aircraft to transport Ms Mc G to London.

21.58 hours (OLCHC; Sequence of Events):
It is documented that Nursing Site Manager 2 telephoned the Transplant Co-ordinator at Kings College Hospital and advised her of Ms Mc G's transfer.

At the same time Nursing Site Manager 1 contacted Ms Y at European Air Charter and left a message on her telephone to inform her that an aircraft was no longer required as an aircraft had been sourced from the Irish Coast Guard.

Nursing Site Manager 1 indicated that she had tried to contact Deputy Chief Executive Officer Z during the evening to inform her of the events related to Ms Mc G's transfer but that she had been unable to contact the Deputy Chief Executive Officer who was off duty.

Ms Y recalls that she spoke with Nursing Site Manager 2 at some time after this and that Nursing Site Manager 2 informed her that the Irish Coast Guard were in a position to organise an aircraft to collect Ms Mc G from a field outside of her house and that the Coast Guard would take over her transfer to the United Kingdom.

21.58 (Coast Guard log):
Team Leader in Control 1 received a telephone call from the Coast Guard SAR Mission Controller based at Malin Head, the SAR Mission Controller informed Team Leader in Control 1 that he was organising the transfer of Ms Mc G.

The SAR Mission Controller at Malin Head asked which was the nearest airport to Ms Mc G's location and indicated that he presumed it was Sligo Airport.

Team Leader in Control 1 indicated that he did not know if Knock or Sligo Airport was nearer but that he would find out.

Team Leader in Control 1 told the SAR Mission Controller about the Landing Zone at the nearby GAA pitch and that he could provide landing co-ordinates, the SAR Mission Controller stated that he would discuss this possibility with the pilot.[27]

[27] It was confirmed by the Coast Guard Chief Pilot that under the Irish Aviation Authority Regulations that the Sikorsky 61 helicopter used by the Irish Coast Guard does not have approval to make unplanned landings when flying under standard civilian transportation rules which currently includes patient transfers. When flying search and rescue missions the Coast Guard have exemptions.

The SAR Mission Controller indicated that there was certain information that he required from Team Leader 1 in Control related to Ms Mc G, her travelling companions and any medical requirements that she had e.g. oxygen therapy requirements.

Team Leader in Control 1 advised that Ms Mc G had no medical requirements and that he would contact the SAR Mission Controller again shortly to provide the other information needed.

21.58 hours (EMSS log):
EMSS Dispatcher 1 contacted Ms Mc G's parents and asked them how long it would take them to travel to Sligo Airport; Ms M Mc G's parents indicated that it would take approximately one hour.

Mr Mc G recalls that EMSS Dispatcher 1 asked him which airport was nearer to their home i.e. Knock Airport or Sligo Airport.

22.02 hours (HSE log):
Team Leader in Control 1 contacted Nursing Site Manager 2 and informed her that the transfer of Ms M McG was proceeding and that the Irish Coast Guard was providing a helicopter from its Sligo base.

Team Leader in Control 1 informed Nursing Site Manager 2 that he was going to have to terminate the call as he was trying to organise the other aspects of the transfer and that this was time critical at this point.

22.03 hours (HSE log):
Team Leader in Control 1 contacted EMSS Dispatcher 1 and informed him that Ms Mc G's transfer was to proceed using the Irish Coast Guard helicopter based in Sligo.

Team Leader in Control asked EMSS Dispatcher 1 how long it would take Ms Mc G and her family to travel to either Knock or Sligo airports.

EMSS Dispatcher 1 provided GPS coordinates to the local GAA pitch which the helicopter might be able to land in.

Team Leader in Control 1 requested Ms Mc G's details and the details of those individuals travelling with her i.e. her parents which he was given.

Team Leader in Control 1 highlighted the urgency of getting Ms Mc G to an airport as soon as was possible.

22.03 hours:
Mr Mc G recalls that he received a telephone call from EMSS Dispatcher 1 and that EMSS Dispatcher 1 informed him that Ms Mc G would be travelling to the United Kingdom by Irish Coast Guard helicopter and that the family should make their way to Sligo as soon as possible.

EMSS Dispatcher 1 asked Mr Mc G to contact him and let him know when they were on their way.

22.06 hours (HSE log):
Team Leader in Control 1 contacted Malin Head Coast Guard and informed the SAR Mission Controller that he would fax information related to the number of people who would be travelling to London.

Team Leader in Control 1 also provided the GPS coordinates to the local GAA pitch that EMSS Dispatcher 1 had provided and information related to the distance to Knock and Sligo airports from Ms Mc G's home in Leitrim.

Team Leader in Control 1 stated that he would contact the Coast Guard with additional information shortly.

22.10 hours (HSE log)/22.02 hours (EMSS log);
EMSS Dispatcher 1 contacted Team Leader in Control 1 and informed him that the Gardai had confirmed that they would transport Ms Mc G and her family to Sligo Airport and that she would be there in 45 minutes.

Mr and Mrs Mc G confirmed that the transport used to take them and Ms Mc G to Sligo Airport was provided by a family friend (who is a member of An Garda Síochána) and that the Garda Traffic Corps provided an escort which drove ahead of the car that the family were travelling in.

Team Leader in Control 1 informed EMSS Dispatcher 1 that Ms Mc G and her family should start making their way to Sligo Airport immediately.

22.03 hours (EMSS log):
EMSS Dispatcher contacted Ms M Mc G's parents and advised them to travel to Sligo Airport.

22.04 hours (EMSS log):
EMSS Dispatcher 1 contacted Nursing Site Manager 2 and informed her that Ms Mc G and her parents were on their way to Sligo Airport to take a flight to London on the Irish Coast Guard helicopter.

22.05 hours (EMSS log):
EMSS Dispatcher 1 contacted Team Leader in Control 1 and informed him that Ms Mc G and her parents were on their way to Sligo Airport.

22.10 hours (approximately);
The Coast Guard crew were assembled at the Sligo base.

22.10 hours (EMSS log):
EMSS Dispatcher 1 contacted the UK Air Ambulance agent and informed the agent that the Irish Coast Guard were going to fly Ms Mc G and her family to London and that on that basis that the request to the RAF for assistance could be 'stood-down'.

EMSS Dispatcher 1 also confirmed with the Air Ambulance agent that a medical vehicle would be available to collect Ms Mc G and her family when they arrived in London in order to bring them to Kings College Hospital.

22.11 hours (HSE log):
Team Leader in Control 1 contacted the SAR Mission Controller at Malin Head and informed the SAR Mission Controller that Ms Mc G and her family were on their way to Sligo Airport with an Estimated Time of Arrival (ETA) of 40 minutes.

Team Leader in Control 1 stated that he would fax Ms Mc G and her family's passport details etc. to the Coast Guard.

Team Leader in Control 1 also indicated that he would also begin the process of organising an ambulance to transport Ms Mc G from Heathrow Airport to Kings College Hospital when he received details of the flight time etc. from the Coast Guard.

22.18 hours (HSE log)/22.20 hours approximately: (OLCHC; Sequence of Events):
Team Leader in Control 1 contacted Nursing Site Manager 2 and updated her on the transfer arrangements.

He indicated that he would contact her again with a further update.

The report prepared by OLCHC states that Team Leader in Control 1 telephoned Nursing Site Manager 2 at this time and confirmed to her that an aircraft had been sourced and that the family were expected at Sligo Airport shortly.

22.20 hours (Kings College Hospital records):
The Transplant Co-ordinator at Kings College Hospital has documented that she was contacted by Nursing Administration staff from OLCHC to inform her that Ms Mc G would '*be on her way by 22.40 hours'.*

The Transplant Co-ordinator has documented that she was given an estimated landing time of 01.30 hours in London with an estimated arrival time at Kings College Hospital of 02.00 hours.[28]

22.20 hours:
Mr Mc G recalls that he received a couple of calls to his mobile telephone from EMSS Dispatcher 1 at around this time but that the reception was poor.

It is the recollection of Mr and Mrs McG that at around this time that they also received a telephone call from the Transplant Co-ordinator at Kings College Hospital to check where they were.

22.25 hours (Kings College Hospital records):
It is documented that the Specialist Nurse for Organ Donation contacted the Transplant Co-ordinator and informed her that the start time for the retrieval procedure was confirmed as 00.00 hours.

22.25 hours (HSE log)/22.17 hours (EMSS log):
Team Leader in Control 1 telephoned EMSS Dispatcher 1 and confirmed that EMSS Dispatcher 1 was organising the ambulance transfer for Ms Mc G to take her from Heathrow Airport to Kings College Hospital.

Team Leader in Control 1 requested Ms Mc G and her family member's passport details and EMSS Dispatcher 1 provided this information.

22.21 hours (EMSS log):
EMSS Dispatcher 1 contacted the Transplant Co-ordinator in Kings College Hospital and informed her that Ms Mc G would be travelling to London via a 'heli lift' i.e. helicopter transfer.

[28] The reviewers sought clarification from Nursing Site Manager 2 in relation to the source of this information; Nursing Site Manager 2 indicated that to the best of her recollection that she had gained the information from her telephone conversations from Team Leader in Control 1.

22.28 hours (HSE log):
Team Leader in Control 1 received a telephone call from the Irish Coast Guard in Malin Head who informed Team Leader in Control 1 that the Coast Guard had not yet received the faxed information.

Team Leader in Control 1 stated that he was just about to send the fax.

It was confirmed between Team Leader in Control 1 and the Coast Guard that Heathrow Airport was the destination for the Coast Guard flight.

The SAR Mission Controller informed Team Leader in Control 1 that there might be an issue related to both parents accompanying Ms Mc G during the flight due to fuel limitations.

Team Leader in Control 1 indicated that he did not want to communicate this information to the family at this point as they were on their way to the airport and he did not want to cause them distress by raising this as an issue when it might not arise and that this could be dealt with on their arrival at Sligo Airport.

22.32 hours (HSE log):
Team Leader in Control 1 telephoned the HSE Ambulance Service Education and Competency Assurance Officer and updated him in respect of Ms Mc G's transfer.

22.32 hours (EMSS log):
EMSS Dispatcher 1 contacted Ms Mc G's parents and asked them how much longer it would take them to reach Sligo Airport.

22.37 hours (EMSS log):
EMSS Dispatcher 1 made a second telephone call to Ms Mc G's parents to ask how much longer it would take them to reach Sligo Airport.

22.45 hours (Irish Coast Guard log):
The Coast Guard helicopter crew completed the plans for the helicopter flight to London.

The crew were awaiting the arrival of Ms Mc G and her family so that they could make the required aircraft calculations related to weight, balance and fuel.[29]

22.50 hours (Kings College Hospital records):
The Transplant Co-ordinator telephoned the Transplant Surgeon for Paediatrics and informed him that Ms McG's estimated time of arrival at Kings College Hospital was 02.00 hours.

[29] Few aircraft impose a minimum weight for flight (although a minimum pilot weight is often specified), but all impose a maximum weight. If the maximum weight is exceeded, the aircraft may not be able to achieve or sustain controlled, level flight. Excessive take-off weight may make it impossible to take off within available runway lengths, or it may completely prevent take-off. Excessive weight in flight may make climbing beyond a certain altitude difficult or impossible. The centre of gravity is even more critical for helicopters than it is for fixed-wing aircraft (weight issues remain the same). As with fixed-wing aircraft, a helicopter may be properly loaded for takeoff, but near the end of a long flight when the fuel tanks are almost empty, the centre of gravity may have shifted enough for the helicopter to be out of balance laterally or longitudinally.

The Transplant Surgeon for Paediatrics indicated that he was satisfied with this arrangement.

The liver retrieval team based at Kings College Hospital was mobilised by the Transplant Co-ordinator.

The reviewers sought clarification form the representatives for the Liver Service at Kings College Hospital London in relation to the decision to mobilise the retrieval team at this time.

The reviewers were informed that the timing of the retrieval procedure is based on multiple factors; these include availability of an operating theatre (theatres used for retrieval are also used for emergency procedures), availability of the retrieval team (on this occasion the retrieval team were mobilised from Kings College Hospital) but the Specialist Nurse for Organ Donation had to liaise with other Transplant Centres in relation to acceptance and retrieval of the other organs being donated in this case the patient's lungs; and most importantly the needs of the family of the donor patient.

It was confirmed that in circumstances such as this that the retrieval time is discussed and agreed with the donor family. In this case the Specialist Nurse for Organ Donation had agreed a time for retrieval with the family of the donor patient and this had already been delayed in negotiation with the family. It is not the practice of the Liver Service to seek ongoing renegotiation of retrieval times as the family can withdraw consent to proceed with the procedure at any time.

22.53 hours (HSE log):
Team Leader in Control 1 received a telephone call from Nursing Site Manager 2 who requested an update on the status of Ms Mc G's transfer to London.

Team Leader in Control 1 informed Nursing Site Manager 2 that he would contact the Coast Guard to check on the status and that he would update Nursing Site Manager 2 then.

22.55 hours (Irish Coast Guard log):
The Coast Guard helicopter to be used to transfer Ms Mc G and her family was wheeled out.[30]

It is Mr Mc G's recollection that the helicopter remained in the hangar.

It was confirmed by the Coast Guard pilot on duty that the helicopter to be used to transfer Ms Mc G was taken to the helicopter stand.

22.57 hours (HSE log):
Team Leader in Control 1 contacted the Irish Coast Guard at Malin Head and requested confirmation that the SAR Mission Controller had received the faxed information, the SAR Mission Controller indicated that the faxed information had now been received.

Team Leader in Control 1 asked the SAR Mission Controller if Ms Mc G's family had arrived at Sligo Airport; the SAR Mission Controller informed Team Leader in Control 1 that to his knowledge that Ms Mc G and her family had not yet arrived at Sligo Airport but that he would check this.

[30] 'Wheeling out' the helicopter refers to the movement of the helicopter by tractor from its hangar to the designated helicopter stand at Sligo Airport.

Team Leader in Control 1 requested details of the expected flight time to London, the Coast Guard Controller indicated that it would take at least one hour[31] as the aircraft to be used would need to stop and re-fuel at Waterford Airport.

The Coast Guard Controller then added that he could not give an ETA until he had received confirmation from the helicopter crew as ETA information that he gave could be inaccurate.

Team Leader in Control asked if he could have information related to the ETA as soon as possible as it was very important that this information would be communicated for the purpose of organising road transportation and to update the Transplant Team.

The Coast Guard Controller indicated that he would contact Team Leader in Control 1 again with details of the flight times as soon as was possible.

It is the recollection of the SAR Mission Controller that he indicated to Team Leader 1 that an ETA (Estimated Time of Arrival) would be given on wheels up i.e. that a launch would be expected within the following 20 minutes.

The SAR Mission Controller also confirmed that he would contact Team Leader in Control 1 as soon as Ms Mc G and her family arrived at Sligo Airport.

23.00 hours (Irish Coast Guard log):
Ms Mc G and her family arrived at the Sligo base.

23.03 hours (Irish Coast Guard log):
The Coast Guard helicopter crew adjusted the weight and balance requirements based on the number of people travelling i.e. 3 (one child and two adults) and the amount of luggage that they had brought.

On this basis the fuelling requirements for the helicopter were also calculated and passed. [32]

22.56 hours (EMSS log) i.e. approximately seven minutes later:
Ms Mc G's parents contacted EMSS Dispatcher 1 and informed him that they had reached Sligo Airport.

Mr Mc G recalls that on arrival at the Coast Guard helicopter base that the crew were very friendly and that they brought the family into the kitchen area of the base and that they offered them tea/coffee.

Mr Mc G recalls that the helicopter was in the hangar and that the crew appeared to be in the process of preparing the helicopter.

[31] It was confirmed by the Coast Guard that when the Malin Head SAR Mission Controller stated 'one hour' that he was referring to the estimated travel time to Waterford and not the travel time to London.
[32] The Coast Guard crew indicated that on arrival at the Sligo base that the family had a large amount of luggage with them that weighed approximately 80 lbs. Mr and Mrs Mc G indicated that they were informed that they should bring enough clothes/supplies to Kings College Hospital for a months stay as this was the expected length of time that Ms Mc G would be in hospital following the transplant procedure. Mr and Mrs Mc G indicated that they had never been informed of the implications of passenger/luggage weight in respect of helicopter flights.

It was confirmed by the Coast Guard that the helicopter was outside of the hangar but was parked relatively close to the hangar entrance and not on the helipad for lighting purposes and to reduce the walk to the aircraft.

Mr Mc G recalls that he asked the helicopter crew if they had got the helicopter fixed and that the crew member seemed surprised and had indicated that the helicopter and crew had been there since 18.00 hours and that there was nothing wrong with the helicopter.

It is Mr Mc G's recollection that while the family waited in the kitchen that the pilot had indicated to the family that they would be ready to take-off in 20 minutes and that they would be in the air in 25 minutes and that the crew were currently preparing the flight plan.

It was confirmed by the Coast Guard that as Ms Mc G and her family had never seen or been in a helicopter before that it was thought best that they should remain in the brightly lit hangar with engines off for the safety briefing rather than on the dark noisy runway which might be frightening for the family; and that while they were awaiting the briefing the time was used to correctly stow their luggage, calculate the passenger and baggage weight and to adjust the fuel top-up load and flight plan based on re-fuelling needs. The family were made comfortable while this was done.

Mr Mc G recalls that during his telephone conversation with EMSS Dispatcher 1 that EMSS Dispatcher 1 asked him to confirm the expected flight times with the Coast Guard helicopter crew and to communicate this information to EMSS Dispatcher 1.

Mr Mc G recalls that the Coast Guard helicopter crew informed him that the estimated flight time would be four hours with two re-fuelling stops.

Mr Mc G passed this information to EMSS Dispatcher 1 and EMSS Dispatcher 1 stated that he in turn would pass the information to the Transplant Co-ordinator at Kings College Hospital.

23.08 hours (EMSS log)/23.15 hours (Kings College Hospital records):
EMSS Dispatcher 1 stated that he contacted the Transplant Co-ordinator at Kings College Hospital and advised her that Ms Mc G's estimated time of arrival at the hospital would be 03.30 hours.

The Transplant Co-ordinator has documented that she was contacted by EMSS Dispatcher 1 who informed her that Ms Mc G was being transferred by helicopter and that because of the distance involved that the helicopter would require two stops to re-fuel and that the estimated arrival time for Ms Mc G at Kings College Hospital was 04.00 hours.

It is EMSS Dispatcher 1's recollection that the Transplant Co-ordinator asked him to tell Ms Mc G's parents to wait for confirmation that this timeframe was 'OK' before they commenced the flight to London.

The Transplant Co-ordinator has documented that she contacted the Specialist Nurse for Organ Donation and asked the Specialist Nurse for Organ Donation if the transplant procedure could be delayed to allow Ms Mc G time to travel to the hospital.

The Specialist Nurse for Organ Donation explained that this was not possible as the family of the donor patient had already been waiting since approximately 19.00 hours for the retrieval procedure to commence. In addition the Specialist Nurse for Organ

Donation indicated that there were other logistical problems involved with further delays.

23.10 hours (Irish Coast Guard log);
The helicopter crew commenced delivery of the safety briefing to Ms Mc G and her parents. The briefing was conducted in the kitchen area as it is the largest open area at the Irish Coast Guard Sligo base.

23.10 hours (EMSS log):
EMSS Dispatcher 1 relayed the information from the Transplant Co-ordinator at Kings College Hospital to Ms Mc G's parents i.e. that they should wait for confirmation before commencing the journey.

23.15 hours (Kings College Hospital records):
The Transplant Co-ordinator contacted the Transplant Surgeon for Paediatrics and informed him of the information that she had received from EMSS Dispatcher 1.

The Transplant Surgeon for Paediatrics indicated that this time-frame was too late and that the organ should be offered to another patient to avoid the risk of a wasted organ.

The Transplant Co-ordinator then contacted the Transplant Surgeon for Adults and informed him/her that an organ was available for transplantation.

The Transplant Co-ordinator has documented that she contacted EMSS Dispatcher 1, M&L and Ms Mc G's parents to inform them that the organ was being given to another patient and that as a result Ms Mc G's transfer to the United Kingdom should not go ahead.

23.20 hours (Irish Coast Guard log);
The Coast Guard helicopter engines were started[33].

23.22 hours (EMSS log):
The Transplant Co-ordinator in Kings College Hospital advised EMSS Dispatcher 1 that Ms M Mc G should not travel as the time-frame for her arrival meant that the transplant would not proceed.

23.24 hours (EMSS log):
EMSS Dispatcher 1 relayed the information from the Transplant Co-ordinator in Kings College Hospital to Ms Mc G's parents.

Mr Mc G indicated that when he received this information that at first he did not understand what was happening.

Mrs Mc G was very upset and EMSS Dispatcher 1 recalls that Mrs Mc G contacted him once again and asked if there was any way that Kings College Hospital would agree that they could travel so that Ms Mc G could have a chance of receiving the liver.

Mr and Mrs Mc G both indicated that Ms Mc G was very upset but that she tried not to let the Coast Guard helicopter crew see how upset she was.

23.23 hours (Irish Coast Guard log):

[33] It was confirmed by the Coast Guard that what generally happens is that the aircraft is disconnected from the mains electrical cable and the engines started. This does not mean rotors turning.

The Coast Guard helicopter crew received the instruction to stand-down on the basis of information relayed by Mr Mc G and the helicopter engines were stopped.

23.30 hours (EMSS log)/23.35 hours (OLCHC; Sequence of Events):
EMSS Dispatcher 1 contacted Nursing Site Manager 2 and advised her that Ms Mc G's transfer to London to undergo a liver transplant had been cancelled because of the time that it would take for her to reach the hospital.

The report prepared by OLCHC states that EMSS Dispatcher 1 informed Nursing Site Manager 2 that due to the extraordinarily long transfer time i.e. of approximately four hours that the transplant would not be possible as the time-frame that Kings College Hospital's transplant team was operating to had a cut-off time of 02.00 hours.

23.36 hours:
EMSS Dispatcher 1 contacted the UK Air Ambulance agent and cancelled the road medical transportation arrangements that had been made.

23.48 hours (HSE log)/23.40 hours (EMSS log):
EMSS Dispatcher 1 contacted Team Leader in Control 2[34] and informed him that a decision had been made not to proceed with the transfer arrangements to take Ms Mc G to London due to the length of time that it would take to effect the transfer i.e. four hours via helicopter including two stops en route to re-fuel.

[34] Team Leader in Control 1's shift had ended at 23.00 hours.

Sunday 3rd July:

00.00 hours (Irish Coast Guard log):
Ms Mc G and her parents departed from the Coast Guard base at Sligo.

00.44 hours:
Mr Mc G recalls that during the return journey from Sligo Airport to their home that he received a telephone call from the Transplant Co-ordinator at Kings College Hospital.

He recalls that the Transplant Co-ordinator explained about the hospital's inability to wait any longer so that Ms Mc G could travel to Kings College Hospital and that she apologised for this.

Mr and Mrs Mc G recall that their daughter was very upset and distressed during the return journey to their home and that she indicated to them that perhaps she had missed her one chance of receiving a liver.

Findings and Recommendations:

A systems analysis investigation of an incident seeks to identify Care Delivery or Service Delivery Problems.

Care Delivery Problems are actions or omissions in the process of care where the care deviated beyond safe limits of practice and where this deviation had a direct or indirect effect on the eventual adverse outcome for the patient.

These Care Delivery Problems result from systemic contributory factors which must be identified and appropriately managed in order to prevent recurrence or where this is not possible to reduce the risk of recurrence as far as is reasonably practicable.

The investigation of the incident that occurred on the 2nd July related to the failure to transport Ms Mc G to Kings College Hospital within the required time-frame did not identify any Care Delivery Problems using the criteria outlined in the London Protocol.

However the investigation did identify two Service Delivery Problems.

Service Delivery Problems are failures identified during the analysis of the incident which are associated with the way a service is delivered and the decisions, procedures and systems that are part of the whole process of service delivery.

Service Delivery Problems result from systemic contributory factors in exactly the same way as Care Delivery Problems and similarly the systemic contributory factors must be identified and appropriately managed in order to prevent recurrence or where this is not possible to reduce the risk of recurrence as far as is reasonably practicable.

An examination of the events that occurred on the 2nd July related to the attempts to secure appropriate transport to take Ms McG and her family to the United Kingdom identified the following Service Delivery Problems:

1. **Lack of clarity related to the individual roles and responsibilities of each of the agencies involved in the air transport of patients from Ireland to the United Kingdom and related to how these individual roles and responsibilities 'fit together' to ensure that the transport arrangements are made in a consistent and seamless manner.**

2. **Lack of clarity regarding the time-lines in operation on the 2nd July related to the time available to transport Ms Mc G to Kings College Hospital London.**

Service Delivery Problem 1: Lack of clarity related to the individual roles and responsibilities of each of the agencies involved in the air transport of patients from Ireland to the United Kingdom and related to how these individual roles and responsibilities 'fit together' to ensure that the transport arrangements are made in a consistent and seamless manner.

This investigation highlighted that currently there were a number of agencies and organisations both State and private, national and UK based that are involved in the processes in place to transport paediatric patients to the United Kingdom to undergo transplantation procedures.

The reviewers were struck by the commitment and dedication of all of the individuals who they met as part of this review and who represented the organisations/agencies involved. The general view expressed by all of the individuals who participated in this review was that this process i.e. the air transfer of paediatric patients who are on the transplant list related to the care of children and that therefore 'all of the stops should be pulled out'.

It was also noted that many of the individuals involved in the events of the evening of the 2nd July were not on duty at the time that they were contacted with requests for help; but that when they were informed that the transfer being arranged related to a child/young person on the transplant list that they gave any assistance that they could. In addition other staff remained on duty to assist in making the necessary arrangements.

Many of the individuals involved in the events of the 2nd July expressed deep regret and distress that they had been unable to ensure that Ms Mc G had reached Kings College Hospital in time to have a chance to undergo transplant; and there was unilateral support for a process that was going to identify the potential gaps and weaknesses in the existing systems so as to ensure that this would not happen again as far as is possible.

Notwithstanding the high levels of good will, dedication and co-operation in evidence between the different agencies and organisations involved it was noted that there was evidence of a lack of clarity related to the individual roles and responsibilities of each of the agencies involved; and in relation to how these roles and responsibilities fit together in order to ensure that the emergency transport arrangements made were consistent and stream-lined.

For example it was noted that there were a number of over-lapping communications being made between some of the agencies/organisations involved i.e. both EMSS and Nursing Administration OLCHC were in contact with the Transplant Co-ordinator at Kings College Hospital, EMSS were not aware of the fact that OLCHC were also in communication with Kings College Hospital or that they were also endeavouring to source a private aircraft until this was confirmed at approximately 21.04 hours.

There was evidence of a lack of understanding around language and terminology used between the parties e.g. the view of Team Leader in Control 1 that the SAR Mission Controller in NMOC did not understand what a 'Priority 1' transfer meant.

There was evidence that many of the staff involved were trying to carry out two complex tasks simultaneously e.g. the Nursing Administration staff at OLCHC who

were involved in organising Ms Mc G's transfer while at the same time being responsible for the overall management of Our Lady's Hospital; a busy paediatric hospital during the evening and night of the 2nd July; Team Leader in Control 1 who was organising the air transfer from the HSE Ambulance Service perspective was also the person in charge in the Ambulance Control and Command Centre in Townsend Street which was responding to emergency 999 calls made in the Dublin area and surrounding areas with the Dublin City Fire Brigade during that evening; and the SAR Mission Controller in NMOC in Dublin who was simultaneously co-ordinating a maritime incident response and monitoring the Tall Ships Festival in Waterford with his two Watch Officers.

In addition it was noted that factually incorrect or misunderstood information was communicated on occasion e.g. the communication made to the Transplant Co-ordinator at Kings College London related to the Ms Mc G's expected time of departure from Sligo and arrival in London and Kings College Hospital. Although the information communicated was incorrect it has been confirmed that the information provided did not influence the decision to mobilise the retrieval team from Kings College Hospital; and communication made related to an estimated travel time that related to a re-fuelling location and not the final destination.

Contributory Factors and Recommendations to address these:

Task Factors e.g. Task Design, Availability and use of protocols, availability and accuracy of test results and recommendations to address these:

The investigation identified that in general there was an absence of jointly and formally agreed protocols operating between all of the agencies/organisations involved in the emergency air transport of patients.

It was highlighted during the investigation that in recent years that an increased number of patients attending the hospital require transfer to specialist services in the United Kingdom i.e. two children in 2007 and eight children to the end of July 2011.

During the intervening period changes have been made to the arrangements in place related to the organisation of transport to the United Kingdom for children who are resident in the community or inpatients at OLCHC being treated under the HSE's treatment abroad scheme; but there were no written or jointly agreed protocols underpinning all aspects of these arrangements.

Having fully reviewed and considered all of the information that was presented during the investigation; the reviewers formed the view that the organisation of air transport to transfer children to the United Kingdom is a highly complex process which requires the co-ordination and streamlining of a number of highly specialised, and technical processes; provided by a number of disparate organisations/agencies whose primary role is not the transport of paediatric transplant patients.

For example the co-ordination process requires linking with and communicating with technical experts in liver transplantation procedures, aviation procedures and logistics as well as linking with the parents/guardians of a child who may be very unwell; it could also be reasonably expected that the parents and child will be anxious and nervous about the process that lies ahead of them. All of these professionals/individuals are coming together to engage in one process; but their experience, expertise and knowledge is very different.

Therefore in order to ensure that the transfer process is effective it is of the utmost importance that the professionals involved clearly understand what is required of them to ensure that an effective and efficient outcome is reached.

It is also important that on an inter-agency level that the agencies/organisations reach agreement and understanding in relation to how their roles and responsibilities compliment and support each-other and that these arrangements are regularly and formally reviewed to ensure that they are operating appropriately and effectively.

Recommendation:

1. **That as a matter of priority that all of the stakeholders involved in the organisation of air transport arrangements for children who are resident in the community or inpatients of OLCHC being treated under the HSE's treatment abroad scheme who require transplant should develop, implement, exercise and audit (the process for audit to be agreed through the governance structures/processes established) a suite of formally agreed and approved inter-agency protocols which clearly define the roles and responsibilities of all of the agencies/organisations involved in the process and that further defines the process for the review of the operation of such protocols.**

Team Factors e.g. (Written and Verbal Communication) and recommendations to address these:

In 1999 EMSS were contracted to provide a service to Our Lady's Children's Hospital Crumlin related to the organisation of the transport and transfer of children attending the hospital to the United Kingdom to undergo transplantation.

The reviewers were informed by managers at OLCHC that in 2009 following a review of the existing arrangements undertaken by the HSE Commercial Unit, senior managers at OLCHC and HSE Ambulance Service personnel that an 'informed decision' was made regarding the standardisation of the processes for:

- Obtaining HSE approval for patients travelling abroad.
- Financial arrangements for parents under the E112 treatment abroad scheme.
- The streamlining of the processes for the transport of patients for transplant.

Following this review the process that was agreed at that time was that the Ambulance Service Control and Command Centre would act as the conduit to the State resources i.e. the Air Corps and the Irish Coast Guard and that if these agencies could not provide a resource; that responsibility would revert back to the Nursing Administration staff at OLCHC to organise a private aircraft through a broker.

The reviewers were informed that regular meetings took place between the HSE Ambulance Service, management at OLCHC and the HSE Commercial Unit to improve services to children requiring treatment abroad from February 2010 onwards.

The representatives from EMSS who were involved in this review stated that they were not formally informed of any plans to alter the existing protocol at that time; and that they first became aware of the planned changes to the existing protocol in May 2011 when they were contacted by the parent of a child on the transplant list who informed the EMSS representatives that they had just received a telephone call from a Clinical Nurse Specialist to inform them of the planned changes to the existing

arrangements. The parent was seeking assurance from EMSS that everything was still in order for the transfer of their child.

The EMSS representatives indicated that within 24 hours of this telephone conversation with the parent that they received a letter from management at OLCHC informing them that their services would not be required from the end of July 2011.

The situation at the beginning of July of this year was that EMSS were still contracted to organise the transfer of three children who were attending OLCHC and who were on the transplant waiting list. These three children were the last remaining children where EMSS were contracted to organise transport arrangements to the United Kingdom. All other children requiring transport i.e. whose names have subsequently been added to the transplant list are managed as per the new arrangements in place between OLCHC and the HSE.

Although EMSS still retained responsibility for the transfer of these three children; in line with the current procedure for the access of State assets they were required to access the State assets i.e. Air Corps/Coast Guard aircraft through the HSE Ambulance Service. EMSS indicated that prior to the development of the new procedures in 2009 that they could link directly with the Air Corps. The Irish Coast Guard had never been a point of contact for EMSS.

The EMSS representatives indicated that they were not involved in the development of some of the new and amended procedures related to the transport process and that they had formally communicated their concerns related to the 'unnecessary complications and delays' regarding the new procedures in a correspondence sent in March 2010.

Although it was noted by the reviewers that EMSS are no longer involved in the organisation of air transport arrangements for paediatric transplant patients; the systems issues that their previous involvement highlighted requires action.

Recommendations:

2. **That any changes to internal processes/protocols related to air transfer arrangements made by one or more agencies/organisations involved in the provision of air transport services must be formally communicated in a timely manner to the other agencies/organisations involved and that intra-agency protocols in place are amended accordingly.**

3. **That any safety concerns raised in relation to the operation of the protocols in existence are fully considered at the time by the appropriate governance body and in line with the HSE Risk Register processes to ensure that such concerns are risk assessed and that appropriate control measures are identified and implemented to address these safety concerns.**

4. **Because of the technical and logistical complexity of the processes required to arrange air transportation; and the number of agencies/organisations currently involved in the provision of air transport arrangements; consideration should be given to centralising the organisation of emergency air transport arrangements to one agency/organisation. This will allow that organisation to build up a level of expertise, competency and understanding of all of the issues related to the process and will also ensure that the process is more streamlined**

and efficient. It will also ensure that all communication is directed through one central point. Related to the centralisation of this function it is also recommended that consideration is given to the development of a shared ICT to facilitate rapid and clear transfer of data and pre-understanding of the availability of aircraft.

Team Factors (Congruence) and recommendations to address these:

While there was evidence that there were defined roles for some of agencies/organisations involved in the organisation of emergency air transport arrangements e.g. EMSS, the Air Corps and the HSE Ambulance Service; there was less clarity around the roles and responsibilities of other agencies e.g. Nursing Administration at OLCHC and the Irish Coast Guard.

This was evidenced by the fact that although EMSS retained responsibility for the transport arrangements of Ms Mc G on the 2nd July when a State asset could not be sourced. Nursing Administration was also involved in sourcing a private jet when the procedure in place appeared to indicate that this was the responsibility of EMSS. The EMSS Dispatcher indicated that he was initially unaware that Nursing Administration at OLCHC was also in communication with Kings College Hospital and that they were also engaged in sourcing an aircraft. As stated in the Chronology Section of the report; EMSS Dispatcher 1 became aware that Nursing Administration was also involved in efforts to source an aircraft when he spoke to Nursing Site Manager 1 at approximately 21.04 hours.

Although this was outside of the agreed protocol it is clear that Nursing Administration were doing all that they could to assist in the efforts to source an aircraft to transport Ms Mc G to Kings College Hospital London when HSE Ambulance Control had identified that they could not locate a State asset and EMSS were encountering difficulty locating a private aircraft. The reviewers do not highlight this as a criticism of the actions of Nursing Administration in the circumstances; but to highlight the lack of clarity around the roles of the individual agencies/organisations involved and how they related to each-other.

Nursing Administration through European Air Charter were successful in identifying an aircraft that could transport Ms Mc G and her family from either Knock or Dublin Airports; at about the same time as this aircraft was confirmed as being available the possibility that the Irish Coast Guard helicopter based at Sligo Airport might be available was also identified and some time afterwards this was confirmed.

However it would appear that because the three agencies i.e. the Ambulance Service, Nursing Administration and EMSS were all involved in separate searches and due to the fact that there was no facility for all of the agencies involved to review the available options and to establish all of the relevant information i.e. related to flight times and landing zones; that a decision was made to stand-down the request for the private jet when Nursing Administration at OLCHC were informed that the Coast Guard helicopter i.e. a State asset had become available[35]. The investigation established that notwithstanding the standard protocol indicating that a State asset should be used when available that the private jet would have been able to reach London two hours before the Coast Guard helicopter.

Equally as stated previously there was no guidance available as to how the agencies involved should pool and evaluate all of the available information so that they could

[35] As per the standard protocol currently in place a State asset should be used when available.

effectively compare and contrast the available modes of air transport to select the most appropriate mode of transport in the situation presented.

A further issue highlighted during the review was that while there is a Service Level Agreement in place that relates to the interface between the Ambulance Service of the HSE and the Air Corps; that there is currently no formal agreement in place between the Ambulance Service and the Irish Coast Guard related to the provision of aircraft to effect emergency air transplant transfers and that the arrangement in place is informal and based on good will and a recognition that both agencies represent State agencies.

It was highlighted that the Coast Guard's involvement in the air transfer of patients is a relatively new initiative for the Coast Guard and that they provide the assistance required on the basis that the Service regards any such request as a life at risk request and that the Service responds when possible and within the limitations of the Air Operators Certificate.

While it was clear that there were exceptionally good working relationships between the senior managers representing both agencies as was evidenced by the willingness to take and respond to out of hours requests on the 2nd July. It was evident that some members of the Coast Guard staff interviewed did not know what a 'Priority 1'[36] transfer request was and the requirements related to response times i.e. within 15 minutes. The members of the Coast Guard interviewed indicated that their response to any request was usually made as a response to hearing the term 'liver transplant' rather than 'Priority 1' and that they had no understanding of what this term meant.

In addition it was noted that the SAR Mission Controller at NMOC who received the first request for assistance from Team Leader in Control 1 indicated that there was no helicopter available when there was a helicopter available in the Sligo Coast Guard base.

The rationale provided to explain this response was that the SAR Mission Controller in Dublin who responded to the call made the decision that the use of the Dublin based Coast Guard helicopter made more sense in this situation, he did not consider that the Sligo based helicopter was an option as logistically a flight from the Dublin base would have made the journey to London without the need to re-fuel; and that while the flight was being prepared that Ms Mc G and her family could have travelled from Leitrim to Dublin. In addition the SAR Mission Controller indicated that it was his understanding that the telephone call was exploratory in nature. The SAR Mission Controller also stated that as he was dealing with another incident at the same time as he received the telephone call from Team Leader in Control 1 that he may have been somewhat distracted at that time.

It was also highlighted that the SAR Mission Controller would have had concerns if he had been requested to release the Sligo based helicopter as he did not consider it an option; his reasoning being that if it was sent out of the Irish jurisdiction on a mission that the aircraft would have been unavailable for the rest of the evening and that this would have reduced the Search and Rescue (SAR) capability of the Coast Guard to protect the Irish search and rescue region significantly i.e. that the Dublin and Sligo helicopters would both have been unavailable.

[36] It was noted that during the telephone conversation between Team Leader in Control 1 and the NMOC Controller in Dublin at 20.08 hours that Team Leader in Control 1 confirmed that Ms Mc G was a liver transplant patient as well as the transfer being a 'Priority 1' request.

The reviewers were informed that as things stood that it was the SAR Mission Controller's view that a fixed wing commercial aircraft would be available from the United Kingdom.

It was confirmed that the Dublin based Coast Guard SAR helicopter was out of action on the evening of the 2nd July due to a problem with the hydraulics and that the Dublin helicopter crew were on their way to Shannon to collect a replacement aircraft at the time that Team Leader 1 in Control made the request for assistance to the NMOC SAR Mission Controller.

Recommendations:

5. **That as a matter of priority that a formal Service Level Agreement or Memorandum of Understanding should be agreed and implemented between the Departments of Health and Transport in respect of the joint working arrangements between the Irish Coast Guard and HSE Ambulance Service in relation to the provision of emergency air transport to patients on the transplant waiting list and that the implementation of the SLA or MOU is supported by the development of formalised and documented protocols.**

6. **That all relevant staff working within the agencies/organisations providing emergency air transport receive appropriate intra-agency/joint training and education in the implementation of such protocols to ensure that they are fully aware their roles and responsibilities and that such training is also included in induction training provided to new employees.**

The reviewers were informed that OLCHC with the HSE Commercial Unit and Ambulance Services had put in place a plan that from the end of July of this year that Nursing Administration at OLCHC were to assume joint responsibility (i.e. that when a State asset was unavailable to undertake the air transfer of a patient that Nursing Administration at OLCHC would organise air transportation) for the organisation of air transport in conjunction with the HSE Ambulance Service.

There was a variance of view on this issue; while it was the view of senior management at OLCHC that the operation of this protocol was 'in conjunction' with the HSE Ambulance Service; senior managers from the HSE Ambulance Service stated that from their perspective that this was not the case and that the role of the HSE Ambulance Service was to 'support' OLCHC in relation to the organisation of air transport.

While there was evidence that the Nursing Administration staff had experience of organising a number of successful transfers without the involvement of EMSS and that the staff undertaking the function indicated that they were satisfied that they knew what their roles and responsibilities were; it was also noted that the requirement that Nursing Administration assume a central role in the sourcing and organisation of transport arrangements places an additional and significant responsibility on the Nursing Administration staff member who is already responsible for the overall nursing management of the hospital and who is often working alone. The issue was raised that very often requests for the transfer of transplant patients are made over a weekend period or during the night-time period when minimal staffing levels are available.

As noted the current protocols being implemented related to air transport place responsibility on Nursing Administration at OLCHC and the HSE Ambulance Service in relation to the organisation of air transport arrangements for patients. The organisation of air transport is a complex process which requires a significant level of understanding of aviation rules and logistics. This is a competency that senior nursing and ambulance control managers do not possess.

It was also highlighted during the review that during the day and night period of the 2nd/3rd July that there was a child being cared for in OLCHC where a significant amount of time was spent by Nursing Administration in trying to locate a suitable placement for this child; this was in addition to the organisation of air transportation arrangements.

Recommendation:

7. **That as a matter of urgency and as an interim measure i.e. until such a time as a centralised unit is identified to organise air transfers that the senior management team at OLCHC should review the current arrangements that require that Nursing Administration oversee the organisation of air transportation arrangements when a State asset is unavailable for paediatric patients on the transplant list to ensure that this is appropriate and safe.**

Management and Organisational Factors and recommendations to address these:

The investigation has already identified that there is currently a lack of formalised and agreed protocols existing between all of the agencies/organisations involved in the arrangement to secure air transport for patients on the paediatric list awaiting transplant.

It was also highlighted that at the time of writing this report that there is no robust governance structure/ process(es) in place which facilitates the involvement of all of the stakeholders to review and monitor all aspects of the operation of the arrangements related to the organisation of air transport to patients on the transplant list.

A governance structure and process which facilitates the involvement of all stakeholders will facilitate open and clear communication between all of the agencies/organisations involved; it will ensure that safety concerns/issues are addressed in a timely manner and will also ensure that the arrangements in place are continually reviewed and updated on the basis of learning from incidents/near misses etc. that occur related to the operation of the protocols in place.

Recommendation:

8. **That a governance structure and processes are put in place to monitor and review all aspects of the arrangements to transfer patients who are resident in the community or inpatients of OLCHC being treated under the HSE's treatment abroad scheme for transfer for transplant to Kings College Hospital London. This governance group should include senior management representatives of all the stakeholders in these arrangements including but not necessarily limited to the following:**
    - **OLCHC**
    - **Kings College Hospital London**
    - **HSE Ambulance Service**
    - **The Air Corps**
    - **The Coast Guard**
    - **An Garda Síochána**
    - **Patient representative**
    - **HSE Commercial Unit**
    - **Any other relevant stakeholder(s)**

Service Delivery Problem 2: Lack of clarity related to the time-lines in operation on the 2nd July related to the time available to transport Ms Mc G to Kings College Hospital London.

Ms Mc G is a fourteen year old girl; she has been on the transplant waiting list for a liver for the past 11 months. She is currently designated as being on the priority list maintained by Kings College Hospital.

The liver that became available for donation to Ms Mc G on the 2nd July was from a non heart beating donor (NMBD).

The fundamental distinction between non heart beating donors and conventional heart beating donors is the diagnosis of death. In a non heart beating donor diagnosis is by cardiac criteria, whereas in a heart beating donor diagnosis is by brain stem criteria.

Non-beating heart donors are categorised as per the Maastricht Classification[37]; Category III donors are patients in Intensive Care Units where withdrawal of treatment has been planned on medical grounds. The patient is considered for liver donation provided they have a good liver and renal function and after explicit consent has been obtained from relatives. Coroners' approval may also be required to proceed with the donation/retrieval process.

The beating heart donor is always ventilated before death and the heart remains beating at the time of retrieval, with a non-heart beating donor (in controlled circumstances) the organs are retrieved after a "stand off" period of five minutes during which time death is certified.

It was confirmed during the investigation that this was the first time that any child/young person in Ireland had been offered a liver from a non heart beating donor. The reviewers were informed that any liver transplant where the various Irish agencies/organisations had been involved in arranging transport previously had been for liver transplants where the donor was a heart beating donor.

The reviewers were informed that it was the experience of all of the Irish based staff/individuals who had been involved in organising previous air travel that the previous time(s) available to effect the transfer of the patient was generally in the region of eight to ten hours. It was the view of the Kings College Hospital representatives that this time frame would be unusual and that the general time-frame is less.

However all of the transfers previously undertaken by the Irish based staff/individuals related to beating heart donors; the staff/ individuals involved had no prior experience where the donor organ was from a NHBD; it was noted that EMSS Dispatcher 1 who had extensive experience in organising the transfer of transplant patients and who was the contact person with the Liver Transplant Team at Kings College Hospital on the 2nd July was not aware that the donor organ was from a NHBD.[38]

[37] The first international workshop on non-beating donors in Maastricht in 1995 devised four categories of non-beating heart donation, this was revised to five categories in 2006. Reference: Liver Transplantation from non-heart beating donors. S.A White, K R Prasad, , BMJ332:376, published in British Medical Journal Feb 2006

[38] EMSS highlighted that they had been involved in the transfer of 45 transplant patients for OLHSC since 1999; all of which had been successful.

The reviewers asked the representatives from Kings College Hospital if there was a difference between the time-frames available for transfer between beating heart donor organs and non beating heart donor organs. They were informed that when a time-frame can be given then it will be communicated but that this was not always possible and as such that there needed to be flexibility within the transfer process

Team Factors (Verbal and Written Communication) and recommendations to address these:

EMSS Dispatcher 1 requested information related to the time-line available to effect Ms Mc G's transfer to Kings College Hospital on a number of occasions from the time that he made the first telephone call to the Transplant Co-ordinator until the time that a decision was made that Ms Mc G and her family should not travel.

The Transplant Co-ordinator responded that she could not give a time-line but that Ms Mc G should arrive at the hospital 'as soon as possible'.

The same information related to a time-line for Ms Mc G's arrival at Kings College Hospital was sought on a number of occasions by Team Leader in Control 1.

It was confirmed by the Kings College Hospital Liver Transplant Service representatives interviewed as part of this investigation that it is standard practice that the Transplant Co-ordinator will only communicate a time-frame in situations where this information is confirmed i.e. only when the retrieval time has been established.

It was explained that the rationale for this approach is that the Transplant Co-ordinator(s) does not wish to set a target for the agencies/organisations arranging the travel arrangements for the patient's arrival; that the organisations/agencies may identify as not being possible to achieve; rather the Transplant Co-ordinator will await a response from the agency/organisation organising the transfer indicating what is the best time that they estimate that they can arrange the patient's arrival at Kings College Hospital and that the Transplant Coordinator will then communicate this information to the rest of the Liver Transplantation Team to see if this is reasonable and if the Team can accommodate the patient's arrival time based on organ availability and other relevant factors.

It was explained that this approach is taken to give the patient the best chance of having an opportunity to receive the available organ.

It is acknowledged that from the perspective of Kings College Hospital that this approach is considered, that it is fair and that it is aimed at giving patients on the transplant waiting list the very best chance of receiving an organ; however it was also identified that this approach may present problems for the agencies/organisations involved in organising the transfer process from Ireland due to the availability and configuration of Irish services i.e. that there is no dedicated air ambulance service and based on the current arrangements where there is a requirement to try to source an aircraft from a number of different agencies in sequential order; all of whom have information requirements in order to assess if their assets are appropriate to carry out the task.

It was highlighted during the review by the Irish Coast Guard representatives that had they been aware that there was a time-line in operation that necessitated Ms Mc G's arrival in London by 01.30 hours so that she would arrive at Kings College Hospital by 02.00 hours that they would have alerted Team Leader in Control 1 to the fact that

this was not possible using the Irish Coast Guard helicopter based at Sligo prior to the mobilisation of the mission.

Recommendation:

9. **That as an interim measure and notwithstanding the valid reasons for the implementation of the current practice in relation to the communication of time-lines for patient's travelling from Ireland to Kings College Hospital for liver transplantation that as far as is reasonably practicable that the Liver Transplantation Team at the hospital will communicate required time-lines for the arrival of the patient at the hospital and will communicate information related to the type of organ that is available where this has an implication on the time-line so that decisions can be made about the most appropriate mode of transport.**

Task Factors and recommendations to address these:

A further issue highlighted during the investigation process related to the lack of clarity around the time-line available to effect Ms Mc G' transfer to the United Kingdom; was that there was evidence that there was a lack of shared understanding regarding the technical and logistical capabilities and limitations of the aircraft that were being sourced to transport Ms Mc G and her family to London.

In line with the Ambulance Service Standard Operating Procedure; Team Leader 1 had initially contacted the Air Corps to request assistance to transfer Ms Mc G and her family to the United Kingdom.

It is Team Leader in Control 1's clear recollection that during his first telephone call with the General Duty Officer at Casement Aerodrome, Baldonnel that the General Duty Officer had indicated that the Air Corps did not have an aircraft available at the time and that General Duty Officer 1 referred to the AW139 helicopter that was on a mission until 21.30 hours but that the AW139 would not be available to effect the transfer after this time as it could not fly over the sea; and that the government jet was out of the country.

Team Leader in Control 1 recalls that General Duty Officer indicated that he would check to see if there were any other available aircraft and that he would contact Team Leader in Control 1 at that time.

When General Duty Officer 1 contacted Team Leader in Control 1 once again a short while later he indicated that he was sorry but that the Air Corps had no other aircraft available. General Duty Officer 1 recalls that at this time that he offered the use of the government jet on its return to Baldonnel and that it was expected back at around 22.00 hours so would have an estimated departure time of 23.30 hours.

Team Leader in Control 1 recalls that at this time when General Duty Officer 1 indicated that the government jet was expected back at 22.30 hours that he i.e. Team Leader in Control 1 responded that he would try to source an aircraft from the Irish Coast Guard.

Team Leader in Control 1 stated that his date/time stamped record of this telephone conversation makes no reference to any discussion related to a departure time of 23.30 hours.

At approximately 22.00 hours Team Leader in Control 1 received confirmation that the Irish Coast Guard would be in a position to provide an aircraft from the Sligo base; as noted previously the Dublin based helicopter was out of action and was not expected to be operational again until around mid-night.

Based on this confirmation; a decision was made to proceed with the mobilisation of the Sligo based helicopter.

The Department of Transport currently maintains Sikorsky S61 (S61) helicopters on permanent standby at four bases for Search and Rescue incidents including two on the West coast at Shannon and Sligo. These helicopters are principally employed for marine emergency services.

The S61 helicopters that form the Irish Coast Guard fleet are all approximately 40 years old and as such there are a number of limitations imposed on what the aircraft can accomplish.

The cruising speed of the S61 is 110 knots (KTS)[39] and it is generally understood to be a 'slow' aircraft; the helicopter is capable of four hours endurance but time on target and rescue capacities decrease with distance from the airport or refuelling base.

In addition the Irish Coast Guard helicopter fleet do not currently have a 'blanket approval' to make unplanned landings at small sites such as the GAA pitch near to Ms Mc G's home, this is due to regulatory requirements and the fact that the Sikorsky 61 (S61) helicopter is not certified for confined area landings for public transport air ambulance type missions.

It was confirmed that the rescue aircraft that the Air Corps operates do not require this type of Irish Aviation Authority approval as they operate under military flying rules not civil air transport rules.

The reviewers were informed that had the Coast Guard known in advance that a possible landing zone was located near to Ms Mc G's home that they could have applied to land there subject to approval being granted from the regulatory body i.e. Irish Aviation Authority. The reviewers were informed that applications are generally considered within one week.

Recommendation:

10. **That as part of the interagency protocols that are developed related to air transport arrangements for transplant patients; that consideration should be given to proactive planning arrangements e.g. securing of the necessary IAA approval for the Coast Guard helicopters to land at the closest appropriate location. The protocols should also include the sharing of relevant information (with the permission of the families/guardians) e.g. the home locations of patients on the transplant lists/nearest airports/passport details related to the transfer process i.e. prior to the call being received from the Transplant Co-ordinator**

The investigation noted that with the exception of EMSS Dispatcher 1 who had indicated that he had some knowledge of the Coast Guard that none of the

[39] Knot (KT) is a unit of speed equal to one nautical mile per hour i.e. approximately two kilometres per hour .

individuals from the agencies/organisations involved in organising Ms Mc G's transfer had any real understanding of the aviation logistical challenges posed.

Conversely the Irish Coast Guard crew members did not highlight the logistical challenges as the SAR Mission Controller at Sub Centre of the MRSC at Malin Head and the helicopter crew were equally unaware of the time constraints in play.

The Ambulance Control and EMSS personnel indicated that they were not informed of the Coast Guard helicopter's estimated departure or flight times despite a number of requests for this information and that they only received this clarification when it was communicated to EMSS Dispatcher 1 via Mr Mc G. The Coast Guard personnel indicated that it would not have been possible to provide this information until all of the data related to weight, fuel requirements etc. had been assessed by the helicopter crew and that this was only possible when the family had arrived at Sligo Airport.

A view was expressed by some of the individuals involved in the events of the 2nd July that they did not understand why it took so long for the helicopter crew to proceed to starting the helicopter engines and that they did not realise that it would take four hours for the helicopter to complete its journey to London.

This highlighted the lack of knowledge related to the limitations of helicopter flight based on weight, distance and fuel requirements particularly as they related to an older model helicopter such as the Sikorsky S61.

The reviewers formed the view that it was difficult for the individuals/staff charged with making decisions related to the selection of the appropriate method of transport when they did not have access to all of the relevant information.

Recommendation:

11. As stated per Recommendation 1; that as a matter of priority that all of the stakeholders involved in the organisation of air transport arrangements for children who are resident in the community or inpatients of OLCHC being treated under the HSE's treatment abroad scheme who require transplant should develop, implement, exercise and audit (the process for audit to be agreed through the governance structures/processes established) a suite of formally agreed and approved inter-agency protocols which clearly define the roles and responsibilities of all of the agencies/organisations involved in the process and that further defines the process for the review of the operation of such protocols.

During the investigation the reviewers were informed that the Irish Coast Guard will be changing its helicopter fleet over the next two years to modern Sikorsky S92s which will overcome most of the current limitations related to the support that the Irish Coast Guard can provide. The Director of the Coast Guard stated that these new aircraft will be able to provide a more comprehensive, integrated and operationally effective inland service. However he was clear that the introduction of the S92s would not constitute a normal full-time air ambulance or Helicopter Emergency Medical Service (HEMS) as this would reduce the availability of the Coast Guard to undertake their primary task; the provision of helicopter MES[40] Services on Irish coasts and waters.

[40] Marine Emergency Service

The representatives from the Irish Coast Guard who were interviewed as part of the investigation also highlighted that it was noted when Ms Mc G and her family arrived at Sligo that they had never seen or been a passenger on a helicopter previously; additionally the family had brought a large amount of luggage with them.

The helicopter crew members interviewed indicated that a family arriving to board a helicopter and who did not know anything about helicopter flight would necessitate a longer safety briefing; the crew members indicated that while a safety briefing would be required prior to every flight that it would reduce the time required to conduct the briefing if the family had some prior knowledge of what the flight entailed and what was required from a safety perspective.

Mr and Mrs Mc G confirmed that they had not received any information or instruction related to helicopter flight; furthermore they had been advised that when they received the call that a liver was available that they should bring enough clothes/supplies with them to last them for four weeks as this was the anticipated length of time that Ms Mc G would remain in hospital. They were equally unaware of the implications of additional weight as it related to helicopter flight.

The reviewers noted that an *'Information Action Card for parents/guardians of a child awaiting Organ Transplantation'* developed by OLCHC and dated April 2011 does indicate that luggage should be limited to two medium travel bags; however Mr and Mrs Mc G did not receive a copy of this Information leaflet.

Recommendations:

12. **That as part of the information packs provided to paediatric patients who may require an air transfer; that consideration should be given to the provision of information related to all possible air transportation options including helicopter flight; this information might take the form of a Patient Information Leaflet/DVD etc.**

13. **That all patients on the transplant waiting list should receive a copy of all relevant information/advice leaflets prepared by the Our Lady's Children's Hospitall.**

Other Issues:

An additional issue that was raised during the investigation related to a view that Nursing Administration at OLCHC required the approval of senior management in order to proceed with arrangements to secure a private aircraft.

The EMSS representatives who were interviewed as part of the investigation stated that from around 2009 that it had been their experience related to the provision of air transfer arrangements that there was a lack of clarity related to the issue of approval; and that from their perspective that occasionally difficulties had arisen related to the approval process for payments for private air transport obtained.

The EMSS representatives indicated that they had endeavoured to obtain pre-approval in principle for bookings made for private aircraft to avoid any confusion related to the payment of invoices at a later stage; however that they had been unsuccessful in this regard and that the correspondence that they had received from the Overseas Travel Section of the Health Service Executive stated that it was not in a position to authorise or approve such payments.

The EMSS representatives also stated that they had highlighted this issue on a number of occasions with senior management within OLHCC but that they had not received an acknowledgement or a response to the issues.

EMSS then raised this issue with the Lead Consultant Paediatric Gastroenterologist at OLCHC (May 2009) and received a reply from him stating clearly that the issue required to be clarified and that in the event that a child needed transportation to receive treatment that this needed to happen and that the issue of payment should not be a factor.

The reviewers sought clarification on this issue from the nursing managers who are responsible for the organisation of transplant patient transfers with the Command and Control Centre personnel of the Ambulance Service i.e. Nursing Administration; with senior managers from OLCHC and with the HSE managers charged with responsibility to oversee and approve the payment of air transfer fees.

All of those staff interviewed were clear that there is currently no requirement that Nursing Administration staff seek approval before they can proceed with a private aircraft booking. It was highlighted to the reviewers that the Nursing Site Manager is the most senior manager on duty for the hospital and has the authority to make decisions in any urgent and/or emergency situation.

The reviewers were informed by the members of Nursing Administration and the senior managers at OLCHC that were interviewed that approval is not required and were provided with a copy of a Guideline dated April 2011 that does not refer to the requirement to seek authorisation.

The reviewers were also informed by the HSE managers interviewed that in order to ensure that there are no delays related to the booking of a private aircraft that a process of retrospective approval is used i.e. that the approval for payment is made after the booking is made and in many cases after the flight took place so as to ensure that there are no delays in activating the process.

It was noted however that the current procedure does require that the Nursing Administration staff on duty do request a confirmation email from the Ambulance

Service Control and Command Centre confirming that there is no State resource available i.e. that neither the Air Corps nor the Irish Coast Guard have an available aircraft; before they can proceed to organising the private aircraft.

It was confirmed that in all cases that this is email is sent immediately and does not delay the process.

Notwithstanding the evidence that the current arrangements do not require approval before the booking of a private aircraft; it was noted that the EMSS representatives who were contracted to provide this service up until early July 2011 were encountering some difficulties related to approval and that there was no structure that facilitated the discussion and resolution of these issues at that time.

Recommendation:

14. As per Recommendation 8; that a governance structure and processes are put in place to monitor and review all aspects of the arrangements to transfer of patients of OLCHC for transfer for transplants to Kings College Hospital London. This governance group should include senior management representatives of all the stakeholders in these arrangements including but not necessarily limited to the following:

- **OLCHC**
- **Kings College Hospital London**
- **HSE Ambulance Service**
- **The Air Corps**
- **The Coast Guard**
- **An Garda Síochána**
- **Patient representative.**
- **HSE Commercial Unit**
- **Any other relevant stakeholder(s)**

Summary of Recommendations:

Recommendation 1:
That as a matter of priority that all of the stakeholders involved in the organisation of air transport arrangements for children who are resident in the community or inpatients of OLCHC being treated under the HSE's treatment abroad scheme who require transplant should develop, implement, exercise and audit (the process for audit to be agreed through the governance structures/processes established) a suite of formally agreed and approved inter-agency protocols which clearly define the roles and responsibilities of all of the agencies/organisations involved in the process and that further defines the process for the review of the operation of such protocols.

Recommendation 2:
That any changes to internal processes/protocols related to air transfer arrangements made by one or more agencies/organisations involved in the provision of air transport services must be formally communicated in a timely manner to the other agencies/organisations involved and that protocols in place are amended accordingly.

Recommendation 3:
That any safety concerns raised in relation to the operation of the protocols in existence are fully considered at the time by the appropriate governance body and in line with the HSE Risk Register processes to ensure that such concerns are risk assessed and that appropriate control measures are identified and implemented to address these safety concerns.

Recommendation 4:
Because of the technical and logistical complexity of the processes required to arrange air transportation; and the number of agencies/organisations currently involved in the provision of air transport arrangements; consideration should be given to centralising the organisation of emergency air transport arrangements to one agency/organisation. This will allow that organisation to build up a level of expertise, competency and understanding of all of the issues related to the process and will also ensure that the process is more streamlined and efficient. It will also ensure that all communication is directed through one central point. Related to the centralisation of this function it is also recommended that consideration is given to the development of a shared ICT to facilitate rapid and clear transfer of data and pre-understanding of the availability of aircraft.

Recommendation 5:
Because of the technical and logistical complexity of the processes required to arrange air transportation; and the number of agencies/organisations currently involved in the provision of air transport arrangements; consideration should be given to centralising the organisation of emergency air transport arrangements to one agency/organisation. This will allow that organisation to build up a level of expertise, competency and understanding of all of the issues related to the process and will also ensure that the process is more streamlined and efficient. It will also ensure that all communication is going through one central point.

Recommendation 6:
That as a matter of priority that a formal Service Level Agreement or Memorandum of Understanding should be agreed and implemented between the Departments of Health and Transport in respect of the joint working arrangements between the Irish Coast Guard and HSE Ambulance Service in relation to the provision of emergency air transport to patients on the transplant waiting list and that the implementation of the SLA or MOU is supported by the development of formalised and documented protocols.

Recommendation 7:
That all relevant staff working within the agencies/organisations providing emergency air transport receive appropriate interagency/joint training and education in the implementation of such protocols to ensure that they are fully aware their roles and responsibilities and that such training is also included in induction training provided to new employees.

Recommendation 8:
That as a matter of urgency and as an interim measure i.e. until such a time as a centralised unit is identified to organise air transfers that the senior management team at OLCHC should review the current arrangements that require that Nursing Administration oversee the organisation of air transportation arrangements when a State asset is unavailable for paediatric patients on the transplant list to ensure that this is appropriate and safe.

Recommendation 9:
In the event that it is considered safe and appropriate that Nursing Administration undertake this role that OLCHC ensure that the appropriate training, support, protocols and guidance are available to Nursing Administration staff to assist them to undertake this role and that such arrangements are regularly and routinely monitored and evaluated. In the event that it is not considered appropriate and safe that Nursing Administration undertake this role that appropriate alternate arrangements are put in place as a matter of urgency.

Recommendation 10:
That a governance structure and processes are put in place to monitor and review all aspects of the arrangements to transfer of patients of OLCHC for transfer for transplants to Kings College Hospital London. This governance group should include senior management representatives of all the stakeholders in these arrangements including but not necessarily limited to the following:

- OLCHC
- Kings College Hospital London
- HSE Ambulance Service
- The Air Corps
- The Coast Guard
- An Garda Síochána
- Patient representative.
- HSE Commercial Unit
- Any other relevant stakeholser(s)

Recommendation 11:
That as an interim measure and notwithstanding the valid reasons for the implementation of the current practice in relation to the communication of time-lines for patient's travelling from Ireland to Kings College Hospital for liver transplantation that the Liver Transplantation Team at the hospital will communicate time-lines for the arrival of the patient at the hospital; and will communicate information related to the type of organ that is available where this has an implication on the time-line so that decisions can be made about the most appropriate mode of transport.

Recommendation 12:
That as part of the interagency protocols that are developed related to air transport arrangements for transplant patients; that consideration should be given to proactive planning arrangements e.g. securing of the necessary IAA approval for the Coast Guard helicopters to land at the closest appropriate location. The protocols should also include the sharing of relevant information (with the permission of the families/guardians) e.g. the home locations of patients on the transplant lists/nearest airports/passport details related to the transfer process i.e. prior to the call being received from the Transplant Co-ordinator.

Recommendation 13:
That as part of the preparation provided to paediatric patients on the transplant list where there is a possibility that a helicopter may be used to effect the transfer of the patient; that consideration should be given to the provision of information related to helicopter flight; this might take the form of Patient Information Leaflets etc.

Recommendation 14:
That all patients on the transplant waiting list should receive a copy of all relevant information/advice leaflets prepared by Our Lady's Children's Hospital.

Appendix 1

Terms of reference for the investigation an incident of issues with securing air transportation for transplant within a clinical deadline

Introduction
These are the terms of reference for the investigation commissioned by
The Co-Chairs of the Serious Incident Management Team into the of issues with securing air transportation of a patient to the UK within a clinical deadline for a transplant on 2nd of July 2011

Purpose
The purpose of this investigation is to:
- Establish the factual circumstances leading up to the incident
- Identify any care/service delivery problems that contributed to the incident
- Identify the contributory factors that caused care/service delivery problems
- Recommend actions that will address the contributory factors so that the risk of future harm arising from these factors is eliminated or if this is impossible, is reduced as far as is reasonably practicable.

The investigation team
Membership of the investigation team includes:
- Ms. Cora McCaughan, Chairperson
- Ms. Annette Macken, Healthcare Risk Management Services, DML

The Chair, with the approval of the Commissioner may source appropriate expertise as required.

Through the Co-chairpersons, the investigation team will:

- Be afforded the assistance of all relevant staff and other relevant personnel.
- Have access to all relevant files and records (subject to any necessary consent/data protection requirements including court applications, where necessary).

Investigation method
The investigation will follow the HSE Investigation Procedure as per the HSE Incident Management Toolkit (2009) and will be cognisant of the rights of all involved to privacy and confidentiality; dignity and respect; due process; and natural and constitutional justice. The investigation will commence immediately and will be expected to last for a period of approximately 6 weeks, provided unforeseen circumstance do not arise. Should unforeseen circumstances arise, these will be communicated by the Chair of the Investigation Team to the Commissioner.

Following completion of the investigation, an anonymised draft report will be prepared by the investigation team outlining the methods, chronology, findings including care/service delivery problems identified and associated contributory factors and recommendations. All who participated in the investigation will have an opportunity to comment on extracts from the report relevant to them. The final anonymised report will be submitted to the commissioner of the investigation for appropriate circulation. The Report will be shared with the Service User. The Report may be published.

Implementation of recommendations of the report

The Co-Chairs of the Incident Management Team will communicate the recommendations of the investigation to the relevant National Director for implementation. Implementation will be overseen by the National Director of Quality and Patient Safety as per the HSE Protocol for the Implementation of recommendations of serious incident investigations

Reference:

HSE 2009, *"Toolkit of Documentation to support Incident Management in the HSE".*

End. July 2011