NHS
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THE SCOTTISH OFFICE

National Health Service in Scotland Management Executive

St. Andrew's House
Edinburgh EH1 3DG

Dear Colleague

MULTI ORGAN RETRIEVAL ARRANGEMENTS

5 November 1993

Addressees

For information:
General Managers
Health Boards

Chief Executives
NHS Trusts

General Manager
Common Services Agency

General Manager
State Hospital

General Manager
Health Education Board for Scotland

Chairman
Scottish Organ Donor Group

Chief Executive
UK Transport Support Service Authority

Chairman
UK Transplant Co-ordinators Association

Clinical Staff
Transplant & Intensive Care Units

Summary

1. This letter outlines the new arrangements for multi-organ retrieval for Scotland which came into effect on 1 November 1993. It also indicates the consequent changes in the procedures for sharing of organs other than kidneys.

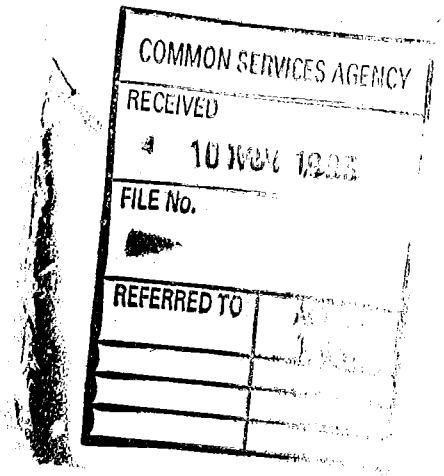
Action

2. Health Boards and Trusts should note the attached information.

3. Clinical staff are asked to ensure that appropriate arrangements are in place as specified in Annex A.

Yours sincerely

DAVID R STEEL
Director of Administration



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ANNEX A

MULTI-ORGAN RETRIEVAL TEAMS

1. The present system of organ retrieval whereby, in certain parts of the country, several different teams make individual arrangements with the donor hospital independently of each other is thought to have led to problems in terms of co-ordination, the efficient use of clinicians' time and possibly the willingness of hospitals to seek permission from relatives for organ donation. There has been mounting pressure to identify a more efficient system.

2. Last year, the Department of Health invited the Royal College of Surgeons of England (RCSE) to establish a working party of heart and liver transplant surgeons to consider changes in the organisation of organ retrieval. A copy of that report is attached as Appendix A. It tied in with similar work already carried out by the transplant community in Scotland. This letter outlines the new arrangements as they affect Scotland.

3. With effect from **1 November 1993**, the United Kingdom was divided into zones for organ retrieval purposes. In England and Wales the geographical zones for each heart and liver unit are not co-terminous, but the whole of Scotland is a single zone for all organ retrieval. Within the Scottish zone, a **multi-organ retrieval team** is now responsible for retrieval of all the organs which become available for transplantation from Scottish donors. Full details of the way in which the arrangements are intended to work in Scotland are set out in the protocols drawn up by the Scottish Organ Donor Group (copy attached as Appendix B). A copy of the protocols has already been circulated to Scottish transplant units, transplant co-ordinators and Intensive Care Units by the Chairman of the Scottish Organ Donor Group.

4. The Group, chaired by Mr Stuart Macpherson, consultant renal transplant surgeon at the Western Infirmary, Glasgow, represents the Scottish heart, liver and kidney transplant units, the Scottish intensive care anaesthetists, and transplant co-ordinators. Any suggested amendments to the clinical protocols should be addressed to the Chairman of the Scottish Organ Donor Group. The Scottish protocols take into account those developed by heart, liver and kidney transplant interests in other parts of the UK who have established similar arrangements for their review.

5. The multi-organ retrieval team will be made up of surgeons from the heart and liver transplant units, a renal transplant surgeon as the member of the team responsible for the recovery of kidneys, anaesthetist and nursing staff and the transplant co-ordinator. The renal surgeon, anaesthetist and nursing staff will usually, as at present, come from the donating hospital.

6. It will be for the directors of the heart and liver units to identify those clinicians from their units who will be on call for retrieval activity so as to provide 24 hour cover. In addition, local renal units will identify the renal surgeons who will complete the team. At any time, the heart and liver units will therefore be expected to know who their team member is and the appropriate members in relation to other organs.

7. Each transplant unit will have contingency arrangements in order to accommodate occasions when more than one donor becomes available within Scotland, so that no potentially available organs are lost. Information about the composition of the multi-organ procurement team must be routinely available to the local transplant co-ordinators to allow them to co-ordinate the various activities. In the unusual circumstances where the Scottish multi-organ retrieval team is unable to respond, the opportunity to procure the organ or organs will be offered to the next designated team through the UK Transplant Support Services Agency (UKTSSA), using the existing rota system.

8. The introduction of these arrangements involves a change to the procedures for the sharing of hearts and livers. The allocation of organs remains based on the principle of national sharing, but the RCSE report clarifies the position in relation to organs retrieved by a zone multi-organ retrieval team. In future, retrieval teams will have first refusal for use of organs retrieved for transplant operations for their own patients. They will also have responsibility for recovering organs donated in their zone which, if they are unable to use them, will be used by transplant units in other zones. Intensive Care Units should continue, as before, to refer potential organ donors to their local transplant co-ordinators.

9. A group has been established by UKTSSA to ensure that the new arrangements are audited and complied with. Details of this will be circulated separately to all UK transplant units. The arrangements will also be subject to the normal administrative controls applied by UKTSSA on behalf of the service users and the UK Health Departments. The scheme will therefore be under regular internal monitoring and review.

10. The changes are expected to be resource neutral in terms of kidney transplant and will not affect the purchaser/provider contracts. With regard to the national heart and liver transplant services, the effect on existing contracts will be monitored by the purchaser, the CSA's National Services Division, and any necessary adjustments to the contracts will be made as required.

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REPORT ON THE DEVELOPMENT OF MULTI-ORGAN RETRIEVAL TEAMS AND A NEW METHOD OF DONOR ORGAN DISTRIBUTION FOR HEART, LUNG AND LIVER TRANSPLANTATION IN THE U.K.

A. INTRODUCTORY PREAMBLE

At the beginning of 1992 I was asked by the Department of Health to convene a meeting of representatives from supraregionally designated heart/lung and liver transplant units to determine whether improvements could be made in the way in which multiple organs were being removed from a single donor. It was alleged that problems were being encountered in coordinating the large number of teams involved and that this and other difficulties were possibly affecting the willingness of hospitals to try and obtain permission from relatives for organ donation. Occasionally, lack of collaboration between teams had put donor organs at risk. It was concluded that, in order to retain the cooperation of kidney transplant surgeons and to promote the acquisition of the maximum number of good donor organs, a better system had to be devised.

An initial series of four meetings was therefore held at the Royal College of Surgeons between March and November 1992. In addition to representatives from each of the supraregionally designated liver and heart/lung transplant units, the meetings were attended by representatives from the Scottish heart and liver transplant units, the President of the British Transplantation Society and observers from the U.K.T.S.S. and the Department of Health.

Having gained a consensus amongst the directors of the liver and heart/lung transplant units, the proposals were sent to both directors of U.K. kidney transplant units and representatives of the U.K. Transplant Coordinators' Association, who were invited to attend a further meeting at the College on March 22nd. At this meeting, which was also attended by the two conveners of the liver and heart/lung transplant groups, and by representatives from U.K.T.S.S. and the Scottish Office Home and Health Department, the proposals as outlined in Sections B and C of this report received unanimous approval.

Those present recognized that the proposals provided a "framework of principles" within which multi-organ donor teams should operate and on the basis of which donor organs for liver and heart/lung transplantation should in future be distributed. There are, however, several outstanding issues that need to be addressed and/or clarified. These are included in Section D of the report and suggestions made as to how they might be taken forward.

It was, however, agreed by all clinicians present and by the representatives of the U.K.T.C.A. that the new scheme should be introduced as soon as possible and that a period of three months should

be/....

be sufficient for the remaining discussions to take place and for local operational plans to be agreed. Hence the date of July 1st was recommended for introduction of the scheme.

B. MULTI-ORGAN RETRIEVAL TEAMS

1. These should normally comprise a liver surgeon, a cardiothoracic surgeon, an anaesthetist, a theatre nurse and a technician, augmented, as necessary, by additional staff depending on circumstances such as the operation involved and the availability of appropriate local staff.

2. Multi-organ retrieval teams should work through the regional transplant coordinators and with the local kidney transplant surgeons and would be responsible for removing all livers, hearts and lungs in their designated areas. Pancreas and small bowel would be dealt with similarly in most instances.

3. By working together, teams would become expert not only in the removal of organs but also in the evaluation and resuscitation of donors, thereby enhancing both the quality of the organs removed and the proficiency and speed of their removal.

4. It will be the responsibility of directors of supraregional liver and heart/lung transplant units to develop agreed working practices with the directors of kidney transplant units within their areas of responsibility and with whom they will be regularly working.

C. PROCUREMENT AND DISTRIBUTION OF LIVERS AND HEART/LUNGS FOR TRANSPLANTATION

1. Each designated heart and liver unit will be allocated a surrounding "Area" based on a population proportional to the contracted transplant activity for the year in question.

2. Such areas will be based on surrounding Health District boundaries.

3. Liver and heart units will be responsible for removing respective donor organs within their designated areas.

4. Every donor must be reported to U.K.T.S.S. immediately it becomes available. This will be the responsibility of the regional transplant coordinator.

5. At the same time, the regional transplant coordinator will contact his or her local kidney transplant unit and then notify the relevant designated liver and heart units responsible for donor retrieval in the area in which the donor is situated. Thereafter the regional coordinator will be responsible for communications between the multi-organ retrieval team and the donor hospital.

6. All transplant coordinators will have available Health Service Journal Maps of the N.H.S. indicating clearly the Health Regions and Districts that are the responsibility of each liver and heart unit.

7. Although the defined areas for designated liver and heart units will inevitably be different, there will in most instances be sufficient overlap for specific heart and liver groups to work together much of the time and develop expertise as multi-organ retrieval teams.

8. Multi-organ retrieval teams must work in close collaboration with their regional kidney transplant teams. The development of a harmonious relationship between teams should be enhanced by the knowledge that they will be working together regularly and by their desire to maximise organ donation within their areas of responsibility.

9. Liver and heart units will have first refusal on all organs they remove within their area of responsibility, providing this is for transplantation into N.H.S. eligible patients. If a unit cannot make use of an organ that is its responsibility to remove, then U.K.T.S.S. should be informed so that the organ, once removed, can be offered to other designated units. This will be done on a rotational basis.

10. Only if no designated units are able to accept donor organs will they be offered by U.K.T.S.S. to non-designated units and finally to non-N.H.S. eligible patients awaiting transplantation, wherever they be situated.

11. If an organ is offered to a supraregional unit but not removed or not used, it will be the responsibility of that unit to send a report to U.K.T.S.S. outlining why the organ was not used.

12. Should more than one donor become available simultaneously in an area served by a supraregional unit, it will be up to the unit to decide whether to use the second organ or not. If not, the unit may ask U.K.T.S.S. to place the donor organ with another centre on a rotational basis. However, the option to offer the organ for procurement by another team should only apply if the local donor team is actually procuring another organ at that time.

13. There will be a regular annual audit of both organs used and not used. This will be a professional responsibility with managerial support from U.K.T.S.S. Audit will also be important with regard to recording the quality of donor organs retrieved and identifying variations in regional rates of donor procurement.

14. It is agreed that Scotland should function as a supraregional zone, being the responsibility of the heart and liver transplant teams in Glasgow and Edinbyrgh. Donor organs surplus to Scottish requirements will be procured locally and distributed through U.K.T.S.S. as for English centres.

15. Separate arrangements have been agreed by the conveners of the liver and heart/lung groups for the procurement and distribution of paediatric donor organs, details of which are available to members of their respective groups.

16. Flexibility within the new system of donor organ allocation will be ensured by an annual review of the areas of responsibility served by each unit based on contracted activity for the next financial year. This will also allow for donor population areas to be provided for newly designated supraregional units, if such be approved.

17. Other weighting factors beside population may need to be considered at the time of each annual review, but, in the first instance, i.e. for 1993/94, areas have been based on populations proportional to agreed contracted activity as from April 1st 1993.

18. The Regions and Health Districts allocated to each supraregional liver and heart/lung centre for 1993/94 have been agreed by representatives from each group.

19. It is recommended that the scheme be introduced on July 1st 1993.

D. ISSUES NEEDING FURTHER DISCUSSION AND AGREEMENT

1. Financial considerations

No request is being made for additional monies to fund the new scheme. It is, however, anticipated that considerable savings will be made by supraregional units on reduced air transport costs and that this should help to pay for the activities of the multi-organ retrieval teams.

2. Funding of Regional Transplant Coordinators

Regional transplant coordinators currently spend considerable amounts of their time on multi-organ donor operations and it would seem reasonable that supraregional liver and heart/lung units should contribute towards the cost of this. Additionally, it might be advantageous to achieve more integration and sharing of the services offered by regional transplant coordinators and their counterparts in adjacent supraregional centres.

3. Kidney-only donor operations

Similarly, and on the basis of quid pro quo, supraregional units might be prepared to help their adjacent kidney transplant units by making their skills available in donor resuscitation and management for the benefit of kidney-only donor operations.

4. Protocols and clinical guidelines

(a) There is a need for broad nationally available guidelines outlining the criteria for acceptability of individual donor organs such as livers, hearts, heart/lungs and lungs. This is already being undertaken by the conveners of the two working groups and should remain as their responsibility.

(b) These general guidelines could then provide the basis for more detailed working practices agreed at a local level between supraregional units and the kidney transplant centres with whom they work.

5. Annual Review Mechanism

It is suggested that this should remain the responsibility of the two conveners of the liver and heart/lung working groups, which are made up of the directors of the respective supraregionally designated centres.

Conveners should be elected by members of their group and should probably not serve for longer than three years.

6. Audit

As already indicated, it is suggested that this should remain a professional responsibility with managerial help and services being provided by U.K.T.S.S. Suggested topics might include:-

(a) The distribution and outcome of all donor organs.

(b) The performance of donor organ retrieval teams, including such matters as punctuality, collaboration with local hospital staff, retrieval times and the seniority of staff involved.

7. Complaints and Sanctions

The possibility of setting up a mechanism for dealing with complaints over the behaviour or competence of retrieval teams was discussed at the meeting on March 22nd and found general support.

This could be achieved by a group comprising the three conveners of the working groups (currently Professor Morris, Peter Friend and John Wallwork) under an independent Chairman (possibly nominated by the Royal College of Surgeons of England), to whom serious complaints which were incapable of resolution at a local level could be referred. In the case of persistent offenders, sanctions in the form of a reduction in population area served by the unit might need to be considered.

Terence English.

Sir Terence English, K.B.E., F.R.C.S.
Immediate Past President, R.C.S. (England)

31st March 1993

SCOTTISH ORGAN DONOR GROUP

PROPOSALS FOR CO-ORDINATION OF ORGAN RETRIEVAL IN SCOTLAND

BACKGROUND

1) The Scottish Organ Donor Group comprises representatives of heart, lung, liver and kidney transplant surgeons, anaesthetists and transplant co-ordinators in Scotland. The Group was established in Edinburgh on 4 June 1992 at a meeting of all transplant surgeons in Scotland, convened at the surgeons' request by Dr Sowler, Principal Medical Officer, Scottish Office Home and Health Department. Transplant surgeons felt that there was a need to consider the Scottish position in the light of the decision to establish liver and heart transplantation in Scotland in addition to existing kidney transplant services, and moves in England to set up zoning of organ retrieval.

MEMBERSHIP

2) The Scottish Organ Donor Group has the following membership :

Mr Stuart Macpherson (Kidney Transplantation) (Convener)
Professor David Wheatley (Heart Transplantation)
Mr James Garden (Liver Transplantation)
Ms Jane Phelps (Transplant Co-ordinator)
Dr Ian Armstrong (Scottish Intensive Care Society)
Dr Elisabeth Sowler (SHHD observer)

REMIT

3) The initial remit of the Scottish Organ Donor Group, agreed at the meeting on 4 June, was to draw up draft proposals for the co-ordination of organ retrieval in Scotland. These proposals were circulated for comment to members of the Group, then to all Scottish transplant interests and appropriate staff at donating hospitals. The aims of the proposals are:

a) that organ donation and retrieval in Scotland is carried out in a manner which is acceptable to donating hospitals and donors' families.

b) that organ donation and retrieval make efficient use of resources in transplant units and donor hospitals and result in successful transplant operations.

c) that by disseminating information and standardising procedures, donating hospitals should feel confident about organ retrieval.

The possibility of establishing a formal Scottish organ procurement network to encompass means of promoting organ donation should be considered by the group in due course.

ACTION

4) The Group met for the first time in Glasgow in July 1992. At that meeting a number of points were agreed which are set out in **Annex A** and **Annnex B** attached to this note. **Annex A** consists of conditions which will apply as a framework for co-ordination of organ retrieval in Scotland. **Annex B** consists of proposals which encompass the whole process of organ donation and retrieval.

5) The proposals have been discussed and agreed by members of the Group and they have been referred for comment to staff in all Scottish transplant units, donating hospitals and UKTSSA (United Kingdom Transplant Support Service Authority). They will be amended by the Group as necessary. They have been recommended to the Scottish Office Management Executive Contracting Task Force which is the funding body in Scotland for National Specialist Services.

6) When co-ordinated organ retrieval arrangements are established the Group envisages that this will allow the exploration on a Scotland-wide basis of ways in which the quality and quantity of donated organs might be improved.

7) It was the intention of the Group that the co-ordinated arrangements for organ retrieval operations should come into force on 1 January 1993 to coincide with the start of liver transplantation. This has been delayed so that introduction can be simultaneous with England and Wales.

ANNEX A

OPERATIONAL FRAMEWORK

1) The Scottish Organ Donor Group will be the organisation responsible for developing the co-ordination of organ retrieval in Scotland.

2) Co-ordination arrangements will be agreed with the National Specialist Services Central Contracting Taskforce which manages heart and liver transplant contracts.

3) For efficiency of co-ordination of retrieval, standard protocols and procedures drawn up by the Scottish Organ Donor Group will be agreed amongst all transplant units and then between transplant units and their donor hospitals.

4) Scottish organ retrieval arrangements will take into account developments and procedures governing organ retrieval and transplantation in the rest of the UK and in Europe.

5) Scottish organ retrieval arrangements must work within UKTSSA guidelines on organ donation and distribution.

6) Transport of surgeons, nurses and organs will be arranged by the transplant teams in conjunction with UKTFT (United Kingdom Transport for Transplants).

7) Clinical audit of organ retrieval in Scotland, the use of organs and the outcome of transplantation will be established by the Scottish Organ Donor Group, in conjunction with appropriate bodies (eg UKTSSA, British Transplantation Society).

8) Audit of the cost effectiveness and efficiency of the retrieval process in Scotland will be carried out as part of any contracting arrangement with funding sources.

9) Scottish organ retrieval arrangements will require the resources of a small central core of Procurement Co-ordinators to manage the retrieval arrangements eg: liaison with UKTSSA on administrative matters, rotas, change in protocols, centralised data collection, administrative support for Scottish Organ Donor Group and education and publicity initiatives in Scotland.

ANNEX B

SCOTTISH ORGAN RETRIEVAL PROCEDURES

The procedures set out below have been agreed by heart, liver and kidney transplant units with donating hospitals in Scotland to ensure that organs from Scottish donors are retrieved with consideration and care but also efficiently so that as many donations as possible result in successful transplantation.

The intention is that all organ retrieval operations in Scotland would be carried out by transplant surgeons from Scottish transplant units. This will also include removal of organs from paediatric donors.

The organ procurement co-ordinators in each of the main transplant centres (Glasgow, Edinburgh, Aberdeen and Dundee) are the key staff who will act as liaison between the donating hospital staff, the visiting surgical teams and the UK Transplant Support Services Agency.

The procedures are set out under the following headings:

1) Sources of Possible Donors.

2) Transplant Units in Scotland.

3) Donor Criteria for Organ Donation.

4) Brain Stem Death Confirmation.

5) Consent to Organ Donation.

6) Notification (Referral) of Donors in Scotland.

7) Pre-operative Clinical Care of Donor.

8) Theatre Procedures for Organ Retrieval.

9) Resources required from Donor Hospital for Organ Retrieval.

10) Resources required from Transplant Unit for Organ Retrieval.

11) Transportation of Organs, Retrieval Teams and their Equipment.

12) Distribution of Organs following Retrieval.

13) Follow-up Information.

14) General Publicity/Education re Donation.

SOURCES OF POSSIBLE DONORS

Organ donors in Scotland will be referred by any hospital with the facilities available to them to maintain ventilation while the diagnosis of brain stem death is established.

TRANSPLANT UNITS IN SCOTLAND

Glasgow	:	Kidney transplantation Heart transplantation
Edinburgh	:	Kidney transplantation Liver transplantation
Dundee	:	Kidney transplantation
Aberdeen	:	Kidney transplantation

DONOR CRITERIA FOR ORGAN DONATION

Listed below are the criteria which patients must fulfil before they can become a donor. The criteria are based on factors which must be satisfied if the outcome is to be a successful transplantation.

Age up to 75 years of age for kidney donation.
60 years of age for liver donation.
50 years of age for heart, heart/lung, lung donation.

No evidence of malignancy except primary brain tumour.
No evidence of severe active sepsis.
No evidence of intravenous drug abuse.
Hep B, HIV negative.

These guide lines, particularly those of age are flexible, depending on the urgency of the need of the recipient. Thus a liver from a donor older than 60 years may be considered suitable for a patient with fulminant hepatitis. In the case of uncertainty each potential donor should be discussed with the Local Procurement Co-ordinator.

a) Specific to kidney donation

No evidence of chronic renal impairment, or prolonged clinical anuria unresponsive to dopamine and a fluid challenge.
Hep C negative.

b) Specific to liver donation

No pre-existing liver disease.
No evidence of alcoholism.
Adequate liver function.

c) Specific to heart, heart/lung and lung donation

Heart
No previous history of myocardial infarction, valvular heart disease or angina.
A recent chest x-ray and ECG will be required.
Hep C negative.
Sputum culture if infection suspected.

Lung
No history of heavy smoking.
No evidence of lung trauma or infection to at least one lung.
Normal gas exchange.
Minimal endotracheal suction.
No evidence of aspiration.

d) Specific to corneal donation

Age 0-100 years.
No past history of intra occular surgery.
Can be removed up to 24 hours post circulatory arrest.

BRAIN STEM DEATH CONFIRMATION

a) "Diagnosis of brain death" - Statement issued by the Honorary Secretary of the Conference of Medical Royal Colleges and other Faculties in the United Kingdon on 11th October 1976 (BMJ 1976 2, 1187-1188)

b) "Cadaveric organs for Transplantation - A Code of Practice" available from the Department of Health.

CONSENT TO ORGAN DONATION

Consent to organ donation is sought from relatives of the potential donor whether or not the donor has expressed his/her wish to donate. This consent should be documented in the patient's case notes. Some donating hospitals have found a consent form useful.

NOTIFICATION (REFERRAL) OF DONORS IN SCOTLAND

All potential donors should be notified by the hospital staff to the appropriate organ procurement co-ordinator in Scotland. The procurement co-ordinator will be available, if required, to offer help or advice to the donor hospital staff on any or all of the following:

a) Suitability of the patient for organ donation.

b) Administrative procedures to be followed in the diagnosis of brain stem death.

c) Discuss organ donation with family of the donor including, if asked by donor hospital, making the initial approach to the family.

d) Obtain consent from the family for organ donation.

e) Obtain consent from the Procurator Fiscal when required.

f) Clinical care of potential donor following the diagnosis of brain stem death prior to the retrieval operation.

g) Collect clinical information needed to decide the ultimate distribution of organs retrieved.

h) Notify donor to UKTSSA and maintain liaison with UKTSSA.

i) Undertake offer of organs to transplant units with suitable recipient patients following UKTSSA rules.

j) Liaison with staff from retrieving transplant centres.

All the above will take place by telephone or by personal visit to the donating hospital. Not all these procedures will be carried out in all donations and the co-ordinator involvement will vary with the individual circumstances.

PRE-OPERATIVE CLINICAL CARE OF DONORS

Investigations

All donors

Blood Group
Blood test for HEP B, HEP C. HIV & CMV
Serum creatinine, urea and electrolyte levels
Arterial blood gases
Blood cultures if sepsis is suspected

Liver Donor
Liver function tests

Kidney Donor
Urine culture if infection suspected

Heart & heart and lung donor
Sputum culture if infection suspected
12 lead ECG
Chest x-ray

Management

a) **Monitoring:** Establish if possible:-

i) Intra-arterial pressure monitoring
ii) Central venous pressure monitoring
iii) Pulse oximetry
iv) Urinary catheter

b) **Oxygenation:**

Aim to maintain SaO2 > 90% or an arterial PAO2 > 10kPa (75mmHg) with or without the use of PEEP. Ventilation should be adjusted to maintain normocapnia (PaCO2 > 4.5kPa)

c) **Hydration:**

Ensure a background hydration fluid regime of 100 ml/hr (adjust as appropriate for children), irrespective of other losses. The crystalloid fluid used should be based on blood chemistry.

d) **Serum Electroylytes and blood glucose:**

Correct as far as possible any abnormalities, particularly in the presence of diabetes insipidus. Potassium should not fall to less than 3.5mmol/l and Glucose levels should not exceed 10 mmol/l.

e) **Blood Pressure:**

The aim should be to maintain an mean arterial pressure of >70mmHg or a systolic pressure of > 100mmHg. This can be achieved by:

i) Volume loading: aim for a CVP of not greater than 15cm H20 (11mmHg) or if a pulmonary artery catheter is in situ, a pulmonary artery wedge pressure of 8-12mmHg. Use colloid and crystalloid as appropriate.

ii) Inotropes: where a satisfactory blood pressure has not been achieved with volume loading, consider the use of inotropes.

f) **Urine Output:**

Aim to maintain a minimum urine output of 1ml/kg/hr. This can be achieved in the following way.

i) Ensure adequate volume loading and blood pressure.
ii) Introduce a Dopamine infusion starting at 2mcg/kg/min.
iii) If the above fail, give frusemide or mannitol intravenously

g) **Diabetes Insipidus:**

i) Ensure the high urine output is not due to excessive volume replacement or the use of mannitol or frusemide.
ii) Maintain the CVP or PAOP as outlined above.
iii) Replace last hour's urine output and other fluid losses in addition to background hydration fluid.
iv) Monitor potassium levels closely and replace as appropriate.
v) In the presence of a sustained high urine output consider the use of DDAVP (0.5mcg bolus).

h) **Temperature Regulation:**

Following the fulfillment of brain stem death criteria body temperature should be maintained as near normal as possible.

Should you require any further information or assistance please contact the local Procurement Co-ordinator.

THEATRE PROCEDURES FOR ORGAN RETRIEVAL

Prior to the start of the retrieval operation the co-ordinator will be responsible for:

a) Confirming the identification of the patient with the donor hospital ITU/ward staff and ensuring the donor is wearing a name band.

b) Ensure that a written record of the brain death confirmation and consent for organ donation are available in theatre with the donor and evidence of donor blood group.

c) The co-ordinator will remind visiting teams to be responsible for their own instruments and equipment.

d) The co-ordinator will help local theatre staff as required.

e) The co-ordinator and transplant surgeon or in multi-organ retrieval the kidney transplant surgeon will look after the body at the end of the retrieval operation with the assistance of a nurse from the donor hospital ITU or theatre depending on local hospital policy.

RESOURCES REQUIRED FROM DONOR HOSPITAL FOR ORGAN RETRIEVAL

Staff

i) Anaesthesia

The differences in individual Departments of Anaesthesia staffing availability and commitments are recognised. However, whenever possible, a suitably experienced anaesthetist should be available to provide appropriate intra-operative care of the donor.

ii) Nursing

a) A nurse to assist in the transfer of the donor to theatre.

b) A suitably qualified nurse to act as circulating nurse, or in exceptional circumstances, as scrub nurse.

c) A suitably qualified nurse to oversee and assist the transplant co-ordinator and surgeon responsible for retrieval of the kidneys in caring for the body of the donor following the operation.

iii) Portering

To assist with:

a) Transfer of the donor to the operating theatre.
b) Transfer of the donor's body from theatre to the mortuary.

Equipment

Equipment for anaesthesia.
A general basic instrument set.
Bowls, towels.
Drip stands.
2 Suction machines - spare bottles.
Cutting diathermy.
Sutures.
Theatre clothes, gloves, gowns, masks and theatre shoes.
Mortuary Pack.

RESOURCES REQUIRED FROM TRANSPLANT UNIT FOR ORGAN RETRIEVAL

a) Staff for multi-organ donation.

Liver Transplant Unit
Transplant surgeon of consultant or senior registrar level, a trainee surgeon, a scrub nurse, a perfusionist.

Heart/Lung Transplant Unit
Experienced surgeon, surgical trainee, a scrub nurse, a perfusionist.

Kidney Transplant Unit
Surgeon

b) **Kidney only donation**
The kidney transplant unit will provide 2 surgeons and no nurses.

c) **In liver only, heart only, heart/lung only donations**
The teams will attend with the same personnel as listed above for multi-organ donation and in each case the local kidney transplant unit will provide a surgeon to assist.

d) **Cornea donation**
A local ophthalmologist will be asked to retrieve the cornea.

e) **All donations**
The local procurement co-ordinator who is in charge of liaison for the donation will be present in theatre.

TRANSPORTATION OF ORGANS, RETRIEVAL TEAMS AND THEIR EQUIPMENT

This will be organised by relevant Co-ordinators and UKTFT.

DISTRIBUTION OF ORGANS FOLLOWING RETRIEVAL

Distribution of organs will be under UKTSSA organ sharing arrangements which are agreed by the UKTSSA Heart Advisory Group, Liver Advisory Group, Kidney Advisory Group, and Cornea Advisory Group.

FOLLOW UP INFORMATION

The local procurement co-ordinator will provide follow-up information on the outcome of transplants to the referring medical, surgical and anaesthetic staff, to theatre and intensive care nurses and to the donor family. The local clinical co-ordinator will write on behalf of the transplanting centre to thank all medical and nursing staff at the donor hospital.

GENERAL PUBLICITY/EDUCATION RE DONATION

The procurement co-ordinators throughout Scotland will work very closely with the Heart Transplant Unit at Glasgow Royal Infirmary and the Liver Transplant Unit at Edinburgh Royal Infirmary and their respective clinical co-ordinators as well as the local kidney transplant units on any publicity or education initiatives planned with the aim of improving donation rates. The aim would be to enable all Scottish transplant units to work as a team to promote organ donation and transplantation within Scotland.