Conference paper

The role of the Specialist Nurse Organ Donation in maximising cardiothoracic organ donation: A narrative review

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Abstract

In the United Kingdom over 7000 people are on the transplant waiting list and about three people are estimated to die per day whilst waiting. Deceased organ donation continues to see significant progress. Following the Organ Donation Taskforce Report the number of deceased organ donors nearly doubled from 809 (2007/08) to 1,5980 (2019/20) and the number of transplants from these donors has increased by 58% from 2,384 to 3,760 but a disparity between the number of organ donors and those on the transplant waiting list remains. This narrative review aims to provide an overview of the collective works of multi-disciplinary professionals involved in the UK organ donation pathway and assess the challenges faced by the Specialist Nurse Organ Donation in maximising cardiothoracic organ donation. NHS Blood and Transplant promote a pioneering culture of research and innovation and for donation opportunities to be maximised the Specialist Nurse needs to take a dynamic approach to exploring donation decisions, and support changes to the pathway that drive sustainability in retrieval. Continuous evolution in the management and strong leadership of the organ donation pathway is required to meet the need of end stage organ failure patients waiting for a transplant and for the best possible care to be provided to our donors and their families.

Introduction

Deceased organ donation and transplantation are unquestionably linked, without organ donation there can be no transplantation. Solid organ donation is a cost-effective treatment option that can improve both quality of life and life expectancy [1]. Without transplantation the prognosis for many end stage organ failure patients is death. In the UK over 7000 people are on the transplant waiting list and about three people are estimated to die a day whilst waiting [2]. For cardiothoracic patients in end stage organ failure cardiac mechanical assist devices do prove to be a lifesaving bridge to transplant but alternative therapies whilst awaiting an organ offer are limited [1].

The organ donation process is complex thus our donor families are provided a high level of expert care to guide them through the pathway. The Specialist Nurse Organ Donation (SNOD) takes on a role of dual advocacy looking after both the needs of the organ donor and their family but also to

be an advocate for those on the transplant waiting list by ensuring the availability and safety of transplantable organs [3]. The speciality of organ donation and transplantation allows for the connection of two different patients and their families, one family whose loved one has reached the end of their life but they have decided to save the lives of others and another family who is reliant on this altruistic act. It is the SNOD who coordinates this process. [4]. This narrative review seeks to explore the role of the SNOD in facilitating and maximising cardiothoracic organ donation in the UK. It aims to explore the current challenges of the disparity between the number of organ donors and the number of people on the transplant waiting list. A literature review has been completed by the author to identify relevant evidence and provide overview of the collective works of multi-disciplinary professionals involved in the UK organ donation pathway.

Background

Deceased organ donation in the UK has seen significant progress within the last decade, every year it saves the lives of thousands of people, but we continue to see a mismatch between the number of successful transplants after organ donation and those who remain waiting on the transplant waiting list.

January 2008 saw the publication of the Organ Donation Taskforce Report which gave fourteen recommendations to revolutionise organ donation within the UK [5]. The focus was on making organ donation a normal part of end-of-life care to be expected but combined this with strong clinical leadership in our Intensive care units and Emergency Departments, forming organ donation committees that focused on increasing consent and authorisation rates for deceased organ donation.

Following publication, the number of deceased organ donors nearly doubled from 809 (2007/08) to 1,5980 (2019/20) and the number of transplants from these donors has increased by 58% from 2,384 to 3,760 but despite this there is still a gap between the number of organs available for transplant and those being added every day to the transplant waiting list (Figure 1).

In 2020 NHS Blood and Transplant (NHSBT) published its strategy - *Organ Donation and Transplantation 2030: Meeting the Need* is a ten-year vision to combine focus from previous strategies and outline the key areas that need to be addressed in the UK to save and improve more lives through organ donation [6]. It had two main propositions: to increase organ donation and to increase transplantation [6]. A scarce number of people die in circumstances where organ donation is an option so it is essential that we maximise the number of donors and the organs from each donor.

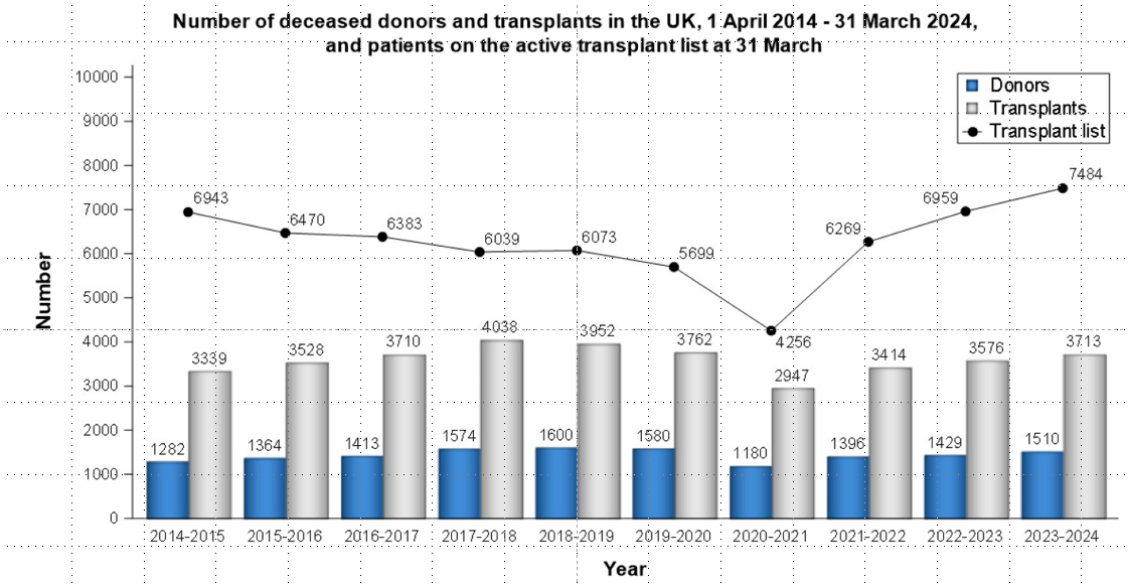

Figure 1. Number of deceased donors and transplants in the UK, 1 April 2014-31 March 2024 - and patients on the active transplant list at 31 March. Reproduced from [7].

A key aspect of the *Meeting the Need* strategy are the areas of influence for the SNOD. It is expected that to make the most effective use of a precious donor organ, we will ensure recipient outcomes are the best in the world. For this to be achieved we need a pioneering culture of research and innovation and to strive to get our processes right 100% of the time.

The length of the donation process is noted to be a frequent reason for families to withhold consent, as progress has been made to ensure the safety and suitability of recipients for every organ the process has become longer and more complex. The SNOD has a responsibility to make the process safe and efficient, ensuring that the accepting cardiothoracic surgeons have enough donor characterisation information available about the donor to make an informed clinical decision about acceptance of an organ for transplant.

One of the greatest challenges in the strategy is the importance of improving the donation experience for families by reducing delays. It is vital that we act together with colleagues across the donation pathway to address the issues of length and timings in a way that benefits all stakeholders [6].

Heart and lung transplant status in the UK

The data for heart transplantation show that in the UK in March 2024 showed there were 248 adults and thirty-five paediatric patients waiting for a heart transplant (figure 2). The median waiting time for adults on non-urgent registration was 867 days and for paediatric patients was 917. During 2023 to 2024 there were two hundred adult heart transplants, 29% of which were from DCD donors. This was 9% higher than the previous year. There were thirty-seven paediatric heart transplants, which is nine more than the previous year. The national rate of patient survival following adult heart transplant at 90 days was 92% and for paediatrics 92.2% [8].

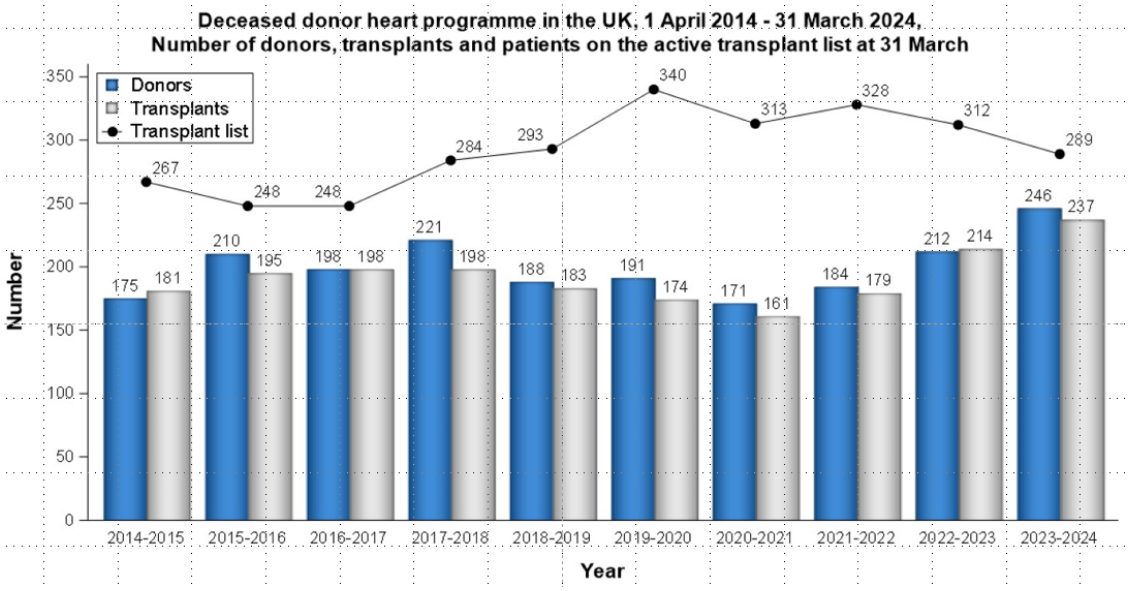

Figure 2. Deceased donor heart programme in the UK, 1 April 2014 - 31 March 2024, along with the number of donors, transplants and patients on the active transplant list at 31 March. Reproduced from [7].

The data for lung transplantation show that in the UK in March 2024 there were 262 adults and thirteen paediatric patients waiting for a lung transplant (figure 3). The median waiting time for a lung transplant from non-urgent registration was 530 days for adults and 1044 day for paediatrics. During 2023-24 there were 135 adult lung transplants including four heart-lung, this was 35% higher than the previous year although not as high as pre-Covid-19 pandemic. There were four paediatric lung transplants, three more than the previous year. The national survival rate following lung transplant was 88.7% for adults at 90 days and 100% for paediatrics [9].

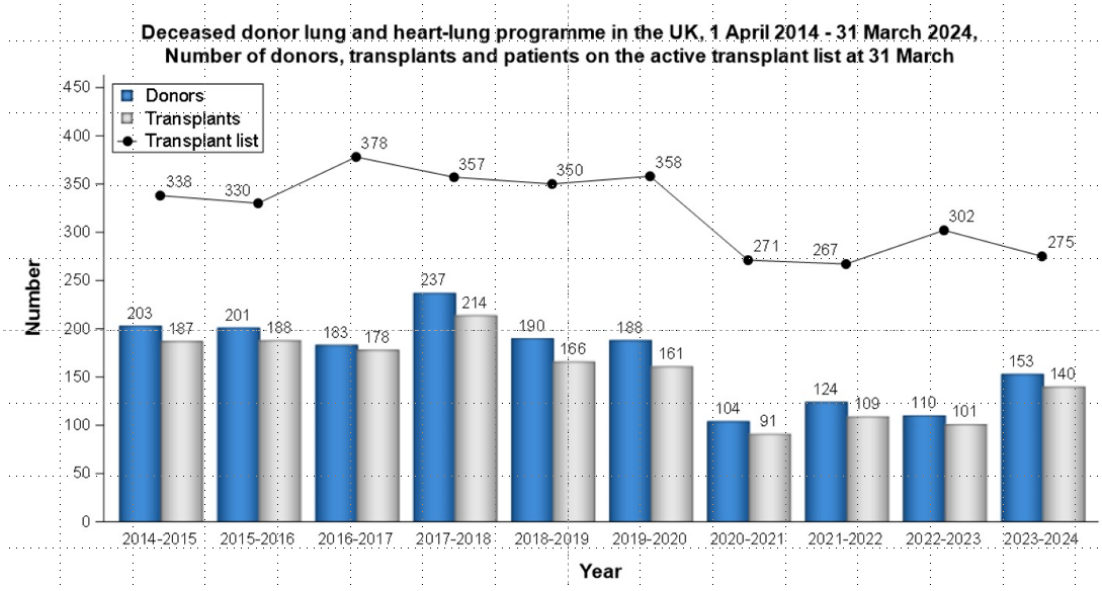

Figure 3. Deceased donor lung and heart-lung programme in the UK, 1 April 2014 - 31 March 2024, along with the number of donors, transplants and patient on the active transplant waiting list at 31st March. Reproduced from [7].

NHSBT organ donation services teams are the front line of organ donation. The UK is divided into a total of twelve regional teams providing a 24-hour service to facilitate and coordinate the organ donation pathway, coordinated by the SNOD. SNODs are an established and defined role in the UK and have been shown to increase deceased organ donation [10].

Organ donation is a comprehensive and complex pathway that begins with the identification of the potential organ donor and ends with the transplant operation and recipient aftercare. The become expert in this pathway the SNOD receives a high level of training and becomes specialised in the technical and emotional elements of the process. They are required to coordinate the multi-disciplinary team (MDT) and manage the process collaboratively whilst also participating in the care of the bereaved family of the donor [10].

Solid organ donation in the UK has a rigorous governing structure, well-established leadership and established defined professional roles. Centralisation and coordination by SNODs and NHSBT have proven to be effective improving rates of organ and transplantation. It is this strong leadership that enables organ donation to remain a usual part of end-of-life care but more so, help it to become expected [11].

Donor identification and referral to the SNOD

Previous NHSBT strategies have ensured that the option of organ donation has become a usual part of end-of-life care within intensive care departments. The embedded specialist nurse will work with their Clinical Lead Organ Donation (CLOD) and organ donation committee chair to ensure that donation potential is maximised within each ICU and that potential donors are recognised and referred to the organ donation services team in a timely an appropriate manner [6]. The aim is for timely referral of a potential donor so that the SNOD can make a thorough assessment of their potential to donate and ensure that they are an appropriate candidate before making an approach to the family. A long contact model is often preferred enabling the SNOD to build a rapport with the local clinical team and the patient's family before exploring donation decisions [12]. This time also enables the checking of the organ donor register (ODR), potential conversations with the Coroner or Procurator Fiscal and a review of the patients past medical history with their General Practitioner [6].

National Institute for Health and Clinical Excellence guidelines advise that donors should be identified by treating clinicians as early as possible [13]. It is expected that patients are referred to organ donation services teams if they meet one of two potential criteria. The first being patients that have suffered a catastrophic brain injury and they are reaching the conditions for death by neurological criteria (DNC) or neurological death testing (NDT) is planned. These patients would follow the donation after brainstem death (DBD) pathway. The second being the intention to withdraw life sustaining treatment in patients with a life limiting condition which will or is expected to result in circulatory death [13]. These patients would follow the donation after circulatory death (DCD) pathway. Heart and lung donation are possible on both pathways [1].

Referral to organ donation services teams is made by telephone. Once a referral is received the SNOD will obtain details of the patient's demographics, their admission history and possible absolute contraindications, current clinical details, past medical history, current ventilation status,

cardiovascular stability, infection status, blood results, clinical plan, and information about their family or next of kin. With this information the SNOD can then make an assessment as to whether the patient is a suitable organ donor, if they have registered a decision on the ODR, whether the patient is likely to follow a DBD or DCD pathway or if further assessment is required [14]. Best practice is not to offer donation to a family as an end-of-life option if it is not a possibility as to not cause distress or disappointment so it is ideal to have gathered all the appropriate information before a breaking bad news conversations take place [15].

Maximising organ utilisation from Donation after circulatory death (DCD) donors could help meet some of the shortfall in organ supply but it represents a major challenge as organ donors and recipients become older and more medically complex [14]. The United Kingdom (UK) has become a world leader in DCD heart transplantation [16]. Studies show no differences in survival, intensive care duration, length of hospital stay or need for mechanical circulatory support when compared to DBD heart transplantation. A current issue for the SNOD in this area is the consent and authorisation rate for DCD remaining consistently lower than DBD (figure 4). This can be scrutinised in more detail using data collected by the network of SNODs, the potential donor audit (PDA) [1].

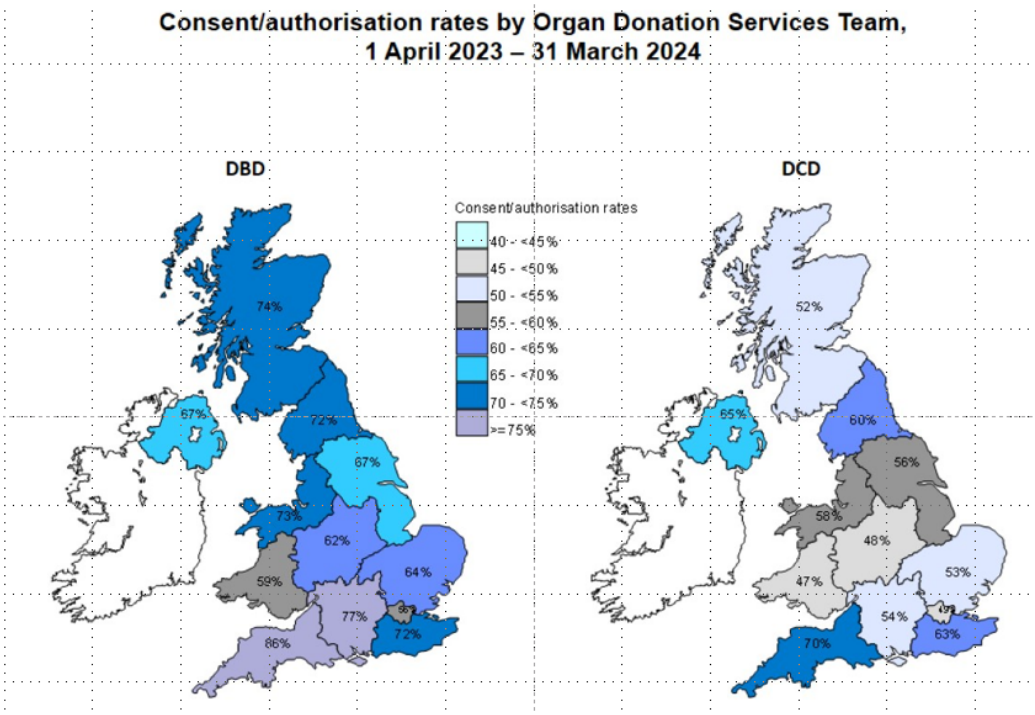

Figure 4. Consent/authorisation rates by Organ Donation Services Team, 1 April 2023 - 31 March 2024. Reproduced from [7].

A key role of the SNOD lies outside of the proceeding donor pathway. Each region has its own nuances in its patient and potential donor demographic and teams meet, debrief, and discuss any influencing factors that may impact local consent rates for donation, review PDA data collected locally and take a dynamic approach to organ donation conversations with potential donor families [17]. The PDA data is presented national and forms benchmarking reports for local practices can be updated and altered to meet patient cohort need and ever strive to ensure that organ donation is offered as an option to families and that we do everything possible to care for those potential donor families [7]. This is possible by working with religious and cultural needs,

family specific wishes, timings and high quality, respectful end of life care for our donors [10]. To uphold the role of dual patient advocate and to meet the need of recipients SNODs need to continue to review the data and how this is reflected in our culture and practices and strive for improvement in the way we care for our donors and their families.

Approach, consent and authorisation

Careful collaborative planning takes place prior to the approach for organ donation between the SNOD and treating clinician to ensure that the family of the patient receive quality communication that is sensitive to their needs, gives them time and privacy and provides sufficient information that is in an understandable format and anticipates concerns. NICE guidelines recommend that a multidisciplinary team (MDT) should be responsible for planning the approach and discussing donation with those close to the patient [13].

The team should include medical and nursing staff who have been involved in the care of the patient, the SNOD and local faith representatives if relevant [13]. The UK Donation Ethics Committee also previously advised a team approach to support a family through organ donation discussions, the SNOD has the detailed knowledge and expertise to lead this process but should be supported by other members of the clinical team [12]. The UKDEC was an independent committee that was hosted by the Academy of Medical Royal Colleges (AoMRC) that ran from 2010-2016, its legacy has now been incorporated into the Donor Actions Framework (DAF). The DAF is a document that provides a professional, ethical and legal framework for the care of deceased organ donors summarised and written in collaboration with stakeholders from the Intensive Care Society [18].

Once the planning of the approach has taken place the team will meet with those close to the patient, confirm their understanding of the situation and assess if the family understand that their loved one has died or that death is inevitable. Donation should not be discussed until the family has accepted the reality of the clinical situation. If they are having difficulty understanding the severity of the situation, they can be offered further support to understand and accept their loss. Until they come to terms with the inevitability of loss, they will not be in a position to consider donation and it would be unfair to expect them to do so.

Discussing donation may be collaborative or decoupled on from or be a separate conversation to the initial breaking bad news conversation held with the family. Specific information will be provided regarding the patient's status on the ODR or the deemed consent legislation within the UK, the patients potential to donate and the benefits of donation to recipients. Timings of procedures would also be given and an outline of the donation pathway and what this entails. The aim of this conversation is informed consent and an enduring decision based on the four guiding principles of the Human Tissue Authority, appropriate consent, dignity of the donor and their family, quality care and honesty and openness of the professionals involved [19] . It can be an empowering decision for families if given the correct information, it may also then also become an informed decline but still was the outcome of an effective collaborative conversation [3]

Deemed consent was introduced in England in 2020 and then the following year in Scotland and Northern Ireland, it is described as a soft opt-out system [20]. Deemed consent intends that all

adults are considered to have agreed to be an organ donor when they die unless they have recorded a decision not to donate or are in one of the excluded groups. The purpose of this change in legislation was to increase the number of organ donors and it brought the law in England in line with Wales where this system had already been introduced [21]. Unfortunately, a challenge faced with deemed consent rate is that the implementation of the law change has not been associated with a change in public attitude to organ donation preferences that are likely to influence consent overall so far [2]. Research shows that public attitude to donation can potentially be influenced by SNODs if they instead encouraged people to express their organ donation decision to their family. It is reported that even though, in countries with developed healthcare systems where support for organ donation is high, one of the major challenges facing deceased donation remains low consent rates [2].

Consent, authorisation and cardiothoracic potential

Following verbal consent to proceed with organ donation the SNOD will meet with the family and complete the consent form. It is determined during this conversation if the patient has given first person consent by expressing a decision or by opting in on the ODR, if consent is given by nominated representative, the person ranking highest in a qualifying relationship or if consent is deemable for countries and territories where deemed consent applies [19]. The consent for organ and tissue donation form outlines which organs and tissues their loved one can donate. For cardiothoracics, donors following both DCD or DBD pathways can be considered for heart for solid organ donation, lungs for solid organ donation or heart for valves.

For heart donation there are considerations prior to taking consent. The patient's age, if they have coronary artery disease, a prior median sternotomy for cardiac surgery, a poor left ventricular ejection fraction, myocarditis, or Lyme disease. For lung donation age is also taken into consideration, previous intra-thoracic malignancy, significant chronic destructive or suppurative disease, evidence of major pulmonary consolidation, influenza, or anti-phospholipid syndrome. For both heart and lungs each potential donor is assessed on a case-by-case basis and contact can be made with recipient centres prior to offering organs to gather opinions on transplant suitability [14].

Families can also save an improve lives through research if it is not possible to donate for transplantation, in some circumstances hearts or lungs can be donated to improve future healthcare outcomes if it is believed that this is something the patient would have agreed to in life. The donor family will be informed and supported throughout all the steps in the process to ensure their comfort and they remain at the heart of this conversation.

During the consenting conversation the pathway is explained providing rationale which is based on recipient safety [19]. A medical and social history questionnaire is completed to gather information about the donor and any risks to the possible transplant recipients. A blood group is obtained and bloods are taken for tissue typing to ensure compatibility between donor and recipient and reduce the risk of rejection. Microbiology testing alongside covid-19 sampling to assess for blood borne infections or other relevant infectious agents and the family are informed that if any information is discovered that has implications for them or their own health could be affected [22]. This catalogue of information is collated to ensure recipient safety and suitability of

transplanted organs is maximised. Throughout the process it is vital that good quality intensive care medicine continues and that the patient's organ function is optimised for donation. This process is called characterisation [22].

For heart donors an ECG and ECHO will be done following confirmation of death by neurological criteria or following consent in a DCD donor. Details of previous surgeries, implantable devices, chest trauma or drains are recorded. CT and MRI scan imaging that is available from the admission is reviewed for any significant findings and a body map is completed documenting height and weight. For lung donors a similar workup is completed. Additionally, a chest XRAY is performed looking to rule out signs of infection or consolidation, evidence of tuberculosis or potential malignancy. Previous surgery, chest trauma, drains or contusions is also reviewed and once offering has commenced 2-hourly arterial blood gases are done on an FiO2 100% and a PEEP of 5cmH2O [14].

Organs from potential cardiothoracic donors are often declined during the offering period, this may be because they are perceived to be or are suboptimal. The SNOD can employ valuable donor management and optimisation to maximise the number of organs that can be offered and accepted with the benefit of aiming to improve recipient outcome post transplantation [23]. The key elements of donor management and optimisation are correction of hypovolemia, maintenance of organ perfusion, prompt treatment of diabetes insipidus, corticosteroid therapy, and lung protective ventilation [24]. These interventions should be continued on ICU and intra-operatively where possible ensuring retrieval of organs in an undamaged condition. Donor management and optimisation varies between DBD and DCD patients. For DCD the interventions are pre-mortem. For DCD patients no pre-mortem interventions take place that could be seen as not in the best interest of the patient or if there is a theoretical risk of hastening death although the decision of the patient to donate can be taken into consideration when considering their best interests in donor management [18]. Due to this difference in management one of the potential disadvantages to DCD lungs is the lack of functional assessment or further optimisation prior to or during retrieval [25].

Cardiothoracic offering

Once the characterisation process is complete the donor is registered with NHSBT Hub operations and offering to recipient centres is commenced. The information is transferred by NHSBT on to a Cardiothoracic Advisory Group (CTAG) nationally agreed computer programme and the national transplant waiting list is checked for suitable patients. Patients are prioritised based on their urgency status, blood group, weight and height of the donor compared to the recipient, and presence of antibodies in the recipient blood that may react to the donor organ. Some priority is given to minimising the geographical distance as ischemic time can have an adverse effect on function. After the other factors length of time on the waiting list is also considered. If a patient is on the super urgent list, they will be offered donor hearts or lungs first followed by patients on the urgent list. Throughout this offering process there is a balance to optimise outcomes by selecting the most appropriate recipients for the heart or lungs, whilst also giving priority to the sickest patients [26].

Changes were made in 2017 to UK lung allocation where previously allocation had been a geographical priority it was changed to clinical urgency status and to bring lung offering in line with how hearts are allocated [27]. Listed candidates in whom survival without lung transplant is estimated to be less than 90 days are given priority irrespective of geographical zones. Since implementation studies have shown it has successfully reduced median waiting times and increased the odds of transplantation, furthermore the change to allocation policy does not appear to have disadvantaged non urgent patients [27]

Each transplant centre aside from Great Ormond Street Hospital, transplanting paediatric patients only, is allocated a geographic zone also influenced by donor density. The zones are reviewed by CTAG and equity for waiting list patients is ensured [28]. The SNOD will stay in contact during the offering process and if the donor is becoming hemodynamically unstable and solid organ retrieval could be jeopardised offering sequences can be reviewed. During this period communications begin with recipient centre points of contact. Negotiations regarding potential retrieval timings commence between all stakeholders including abdominal teams to find a retrieval window that is optimal for all recipients.

The SNOD will ensure that the transplanting surgeon has the information they require on organ allocation to ensure that they can assess any donor derived risk versus the benefit to their patient [28] It is the responsibility of the recipient surgeon to decide to accept an organ for transplant. A challenge in this area is that those with ultimate accountability for the use of a donated organ are frequently making these decisions outside of working hours, and under significant stress and scrutiny [29]. They only have the information that the SNOD has been able to gather and provide. This is why it is imperative that the SNOD makes a detailed assessment of the donor and provides an accurate and comprehensive overview of the donor characteristics during this period so that organs are allocated appropriately and are utilised whenever suitable [29].

Coordination and retrieval

Organ retrieval is coordinated by the SNOD with the recipient centre, the ICU team and the donor hospital theatre coordinator. The National Organ Retrieval Service (NORS) teams will be mobilised once appropriate and a time of retrieval confirmed. In the UK there are six thoracic NORS teams who work alongside ten abdominal NORS teams. On call NORS teams are assigned to attend proceeding donors based on their travel time and an equal distribution of workload. The retrieving NORS team will include a lead surgeon, a first assistant, perfusionists and scrub practitioners all competent in the perfusion, preservation, and retrieval of organs [30].

The SNOD will conduct a handover briefing about the donor and the organs to be retrieved for donation. A collaborative approach to retrieval occurs and an MDT forms. The local theatre team will be involved to provide support to visiting teams and are included in briefing alongside the donor hospital anaesthetist, and NORS. In a multi organ donor there will be two NORS teams to handover to and the SNOD will oversee a WHO checklist and a safety huddle with the teams prior to the commencement of the retrieval. Quality communication between all members of the MDT will be of the utmost importance during retrieval due to unfamiliar environments and personnel, clinical decision-making requirements by the surgeons about the suitability of an organ for transplant and there are often anatomical challenges for removal and perfusion of organs [30]. If

there are novel technologies being utilised during the retrieval operation the surgical teams will discuss and collaborate on a safe plan.

In a DBD donor the cardiothoracic team may choose to perform further assessment, management, and optimisation of the patient on the prior to retrieval, completing bronchoscopies, right heart catheterisation, and transoesophageal echocardiogram. Some of these interventions are not possible in a DCD donor as they are pre-mortem [25]. For DBD an anaesthetist is required as with any other major operation and they will be able to continue the medical management of the patient that began in ICU, assist to manage large fluid shifts, haemodynamic changes that may occur, and potential cardiac arrhythmias during retrieval [30].

For DCD heart retrieval the diagnosis of death is confirmed in keeping with guidance published by the AoMRC [31]. The AoMRC require mechanical asystole and then a five-minute period of observation to ensure that autoresuscitation does not occur. The specialist nurse will communicate with the NORS team throughout and once death is confirmed so that the team can be ready to perform timely retrieval and minimise organ ischemic time. The heart is explanted on to the Organ Care System (OCS) and the SNOD will have ensured that blood is available for transfusion during this process if required [1].

For DCD lung retrieval the SNOD will coordinate and brief an Anaesthetist on the process before the NORS team arrive at the donor hospital, the Anaesthetist will then be advised on NHSBT DCD Lung retrieval policy and AoMRC timings and will be able to meet the NORS team and join the patient briefing. The anaesthetist will be required to reintubate the donor in theatre after confirmation of death and inflate the lungs for one cycle prior to the ascending aorta being clamped, both lungs are then ventilated to allow adequate distribution of pulmonary flush solution [25].

NORS frequently work unsocial hours in unfamiliar environments as surgical visitors to the donor hospital. There are times where organ donors are attended by NORS but they do not proceed and no organs are retrieved. Non proceeding donors are more common on the DCD pathway as a prolonged time to circulatory arrest and death after treatment is withdrawn can cause unsuitability of organs for transplantation [32]. In recent years the sustainability of the retrieval service, its impact on retrieval surgeons and the relative transplant outcomes have required reassessment. As an organisation NHSBT has established a programme to review the delivery model of organ retrieval to manage challenges in this area. UK organ donation retrieval trends have changed in the last decade, previously organ retrieval was predominantly a nighttime activity but now it is being conducted most frequently in core business hours. This has an impact on donating hospitals, operating lists, an increased number of unpredictable delays to the process and increasing pressure on NORS teams. Consequently, due to these complications when organising retrieval, organ transplant surgery and organ offering is now primarily performed out-of-hours posing avoidable risk due to limited access to clinical support in complex cases, surgeons needing to operate outside of optimal windows and late organ allocation declines due to changes in the MDT. NHSBT proposed system wide changes will aim to create a sustainable NORS service where transplantation is conducted at the optimal time in the day aiming to make the retrieval service sustainable for the future [33].

Discussion

This review set out to assess the areas of influence the SNOD has on number of organ donors. Evidently one of the biggest challenges facing the SNOD to increase the number of cardiothoracic organs for transplant is consent rates. Despite the expectations of many papers pre implementation and evaluation that the deemed legislation would increase organ donation in the UK, research shows that so far this has failed to happen. Consent is a vital influencing factor in bridging the gap, arguably the most vital factor as without consent the rest of the donation pathway ceases to happen. This is even more a factor in consent for DCD which has bene reported on to be notably lower consistently. SNOD organ donation services teams need to continue to scrutinise the PDA data, being dynamic in their approach to exploring donation decisions and encourage people to share their view on donation with family and friends in life.

Overall, this review strengthens that to continue to see improvements to donation and transplantation it requires us to maintain the strong clinical and collaborative leadership of the pathway brought in following the organ donation taskforce report. Coordination by SNODs and NHSBT have proven to be effective improving rates of organ donation and transplantation. The organ donation pathway, its safety, logistics and efficiency rely on the SNODs negotiation, planning, and advanced communication skills. This expert communication enhances likelihood of a successful outcome. The SNOD needs to continue close relationships with local CLODs to ensure that organ donation stays an expected part of end-of-life care in the intensive care and is offered to all families as appropriate [10].

A greater focus on the SNOD role in the sustainability and certainty of the retrieval service will be of benefit as this project starts to grow, we know that length of donor process is a focus for NHSBT and improving the donor family experience. It will be interesting to have a greater understanding of how best the SNOD can support all stakeholders in the donation pathway to address these issues and ensure the most effective use of a precious donor organ. NHSBT are currently exploring changes to the way that NORS are mobilised to retrieve. This is anticipated to extend the length of the donation process but overall, more structure and efficiency should be delivered by the service. It is expected to improve the experience for NORS, transplanting hospitals, recipients and provide more certainty and predictability for donor families [34]. With any adaptations to practice SNODs will need to employ an element of change resilience but we know that through previous successes that good outcomes can be achieved through a pioneering culture of research and innovation.

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