Potential Organ Donor Audit in Ireland

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Abstract
As increasing demand for organs is a challenge for transplant services worldwide it is essential to audit the process of organ donation. To address this, a national audit of potential organ donors was undertaken across hospitals with Intensive Care Units (N=36). Questionnaires were returned on all patients (n=2073) who died in these units from 1/9/07-31/8/08; 200 (10%) of these patients were considered for Brain Stem Testing (BST), 158 patients (79%) were diagnosed Brain Stem Dead (BSD) and 138 patients (87%) became potential donors. Consent for donation was given by 92 (69%) next of kin and 90 potential donors (65%) became organ donors. There was no evidence of a large number of potential organ donors being missed. Recommendations included completion of BSTs on all appropriate patients, development of support on BST, referral of all BSD patients to the Organ Procurement Service; enhanced co-ordination within hospitals and sustained information/education campaigns.

Introduction
This paper presents an audit of potential organ donors in the Republic of Ireland from September 2007 to August 2008. The increasing demand for organs is a major issue for transplant services worldwide. Internationally, the number of patients included on waiting lists for transplants has been increasing while the number of donors and organs available for transplantation has reached a plateau. Transplantation provides the possibility of saving lives and of increasing quality of life for patients. An average donor provides 30.8 additional life years distributed over an average 2.9 different solid organ transplant recipients whereas utilisation of all solid organs from a single donor provides 55.8 additional life years spread over six organ transplant recipients. There is also evidence that transplantation reduces long term health care costs e.g. kidney transplants performed in 2005-2006 in the UK are now saving the NHS £46.1m in dialysis costs each year for every year that the kidney functions. The success of organ transplantation as a treatment for end-stage organ failure means it is essential to identify and monitor the potential for organ donation so as to ensure that adequate consideration is given to donation in all relevant circumstances.

Evidence from previous audits suggests that only about half of potential donors become actual donors. Brain stem death (BSD) is the irreversible cessation of all functions of the entire brain, including the brain stem. BSD is determined in accordance with medical standards using two sets of brain stem tests (BST). The first set of tests are completed and then repeated by another doctor to eliminate observer error. These doctors are not involved in the transplant teams. The interval between the tests is at the discretion of the medical staff and the time of death is the time of completion of the second test if there is no brain stem activity.

Methods
The aim was to audit the potential for organ donation in the Republic of Ireland and to identify factors that impact on the realisation of the potential for such donation. This national audit was cross-sectional using concurrent data collection across hospitals with Intensive Care Units (ICUs) (n=36) from September 1st 2007 to August 31st 2008. Research ethical approval was obtained where requested. The participants in the study were all patients who died in these units during the period of the audit.

The audit tool consisted of a structured questionnaire adapted from UKTransplant which collected data (based on clinical grounds) on whether patients had been considered for Brain Stem Testing (BST) testing. If so then further data on BST, BSD, consideration of organ donation, process of obtaining consent from next of kin (NoK), whether organ donation occurred and basic demographics were also documented. The questionnaires were completed by ICU staff and returned (freepost). Confirmation of mortality statistics was undertaken monthly with ICUs. While the percentage of patients in this audit who were considered for BST compares well to international data it was not possible to be certain that all such patients were identified. These were decided according to the clinical judgement of staff in the ICUs. The audit does not cover patients who may have died in hospital units other than ICU.

Results
Of all patients who died in ICUs 200 (10 %) were considered suitable for BST (Figure 1). Some 114 (57%) were male and 85 (43%) were female. Mean age was 45 years with a range from 2 to 81 years. BSD was confirmed in 158 (79%) of these patients. Reasons for not completing BST are detailed in Table 1. The time interval between the first BST and diagnosis of BSD was <5 hours in 79% of cases (n=140; Median 2.5 hours).

*thiopentone levels high (4) and unable to assess due to injury (1)
Among BSD patients the commonest causes of death were intracranial haemorrhage in 85 (54%) patients and traumatic brain injury in 38 (24%). Twenty (13%) BSD patients were deemed unsuitable for organ donation of whom 14 (66%) were designated medically unsuitable and one third were over 75 years of age. The remaining 138 (87%) BSD patients were deemed unsuitable. In 50% of these, 111 (80%) were referred to the Organ Procurement Service. In 25% of the remaining 27 cases NoK had refused consent for donation. Other reasons for non referral included language barrier and consent issues. Organ donation was discussed with NoK in 133 potential donor cases (96%) and of these consent was given by 92 (69%); 127 of the 138 potential donors had data relating to possession of a donor card. 13 of these patients were known to have a donor card. The main reasons given for withholding consent to organ donation by next of kin are detailed in Table 2.

*Missing data n=2.

The total response was 43 as more than one reason was given in some cases. No significant differences were found in the consent rate by age or gender. Consent rates were 50% where discussion was initiated by staff prior to BST, 64% when discussion of organ donation was initiated after completion of at least one BST and 80% when initiated after diagnosis of BSD. Organ donation occurred in 90 of the 138 potential donor cases giving a donation rate of 65%. In two cases where consent had been given, the patients became medically unsuitable before donation could begin (Figure 1).

**Discussion**

There are difficulties in comparing statistics on potential organ donation internationally due to different definitions in use. In Ireland a potential donor is a patient who has been diagnosed BSD and has no contraindications to organ donation while in some countries the definition is a patient in whom BSD is a possible diagnosis or one who died in an ICU and was considered for brain stem testing (10%) comprises reasonably well internationally (10.5%, 12.2% ). Brain stem tests were not completed in 21% of patients mainly due to the clinical condition of the patient. This is similar to the UK audit (22%) in 2008. In 71% of cases in Ireland this was for medical reasons e.g. deterioration of the patient (including death) or other medical unsuitability, and in 24% of cases NoK stated that they would not consent to donation. Long intervals between the first and second BSTs may prolong suffering for families and may lead to reduction of organ function or indeed loss of donated organs. Procedures and structures should be instituted within hospitals which ensure BST testing is completed without unnecessary delay. The Intensive Care Society of Ireland offers current reviews of guidelines for the diagnosis of BSD and for the management of adult organ donor patients

In this audit, 13% of brain stem dead patients were excluded as potential donors on the basis of contraindications to organ donation (age or medical). The mean contraindication rate (10%) was much higher than the UK audit (0.4%); considerably lower than the 27.1% reported in the Spanish audit. This is particularly important as the criteria for acceptance of organ donors has been expanding in recent years e.g. some countries no longer have an upper age limit for potential organ donors. It has been recommended that a pan European registry of extended donor criteria be developed. In-house donor coordination has emerged as an important factor in the literature especially in relation to early referral, liaison with organ procurement services, as well as support of NoK, ongoing audit and quality assurance. The Organ Procurement Service coordinates donation at national level and each hospital has a donation link nurse who promotes donation. At the time of the audit there were no formal designated donor coordinator posts in individual hospitals. Co-ordination of the organ donor process within hospitals should be enhanced within a multidisciplinary team framework.

The overall consent rate was 69% of potential organ donors where NoK were approached. Specific training for staff in relation to approaching families should be undertaken and certified at a national level. Ideally NoK should be approached after one set of brain stem tests. Indeed this audit demonstrated a higher consent rate when relatives were approached after one set of brain stem tests were completed. Of course if relatives initiate the discussion before brain stem tests there should be a full discussion with an informed member of staff. There is potential to increase the consent rate by improved public awareness of the concept of organ donation and the benefits of transplantation. Among potential donors there was a 31% rate of refusal to consent to organ donation by next of kin. The most common reason given was uncertainty in relation to the patients wishes with regard to donation. The percentage of patients known to have carried organ donor cards was small (10%) though all became donors. The Eurobarometer survey reported that 29% of the general population carry donor cards. Further sustained information and education campaigns are recommended for the public. Discussion of organ donation within families should be encouraged because NoK need to be aware of their family members wishes in this regard. Similarly, alternative ways of indicating preferences (such as completion of the section of the driving licence which indicates consent to organ donation) should be promoted. Public discussion regarding the establishment of a national register which would indicate each individuals choice, should be considered.

In conclusion, this audit found that an organ donation rate of 65% compared favourably to other EU countries despite limited resources and administrative infrastructure here to support it. There was no evidence of a large population of potential organ donors who were being missed by current procedures. Nevertheless the audit provided evidence of a number of areas where small improvements in performance could cumulatively lead to a significant increase in organ donation. Referral cards included completion of BSTs by all appropriate patients, widespread dissemination/availability of the guidelines for BST, provision of support in relation to BST and management of organ donor patients for hospitals that lack experience. Referral of all patients diagnosed as BSD to the Organ Procurement Service at an early stage and enhanced coordination at local/regional hospital level are required. Ongoing audit of all aspects of the donation process should be implemented in order to provide measures of effectiveness of the organ procurement process and to guide developing services. Sustained public discussion and national information campaigns are also recommended.

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