

Cardiothoracic Scout Project: Report from External Review

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The last decade witnessed a dramatic decrease in all cadaveric organ donations in UK, with subsequent drop in transplant numbers. The action of a specific task force nominated by NHSBT succeeded in achieving a significant recovery of abdominal organ transplantation, mainly related to the development of the program of donation after circulatory death (DCD). For example, in 2015 the number of kidney and liver transplants from deceased donors in UK was slightly higher than the European average: 33 kidney transplants per million population (p.m.p.) in UK vs. 31.5 in E.U., and 16 liver transplants p.m.p. in UK vs. 15 in EU..

However, this recovery provided only a slight improvement in heart transplantation. The number of heart transplants was 30% less than the European average (i.e. 3 heart transplants p.m.p. in UK vs. 4.4 in E.U.). Despite efforts in pioneering the utilization of DCD hearts for transplant, the current retrieval, allocation, and donor management system appear inadequate to allow appropriate use of available resources, being the rate of hearts procured and transplanted over the total of donors available the smallest among the major transplant countries (Figure 1).

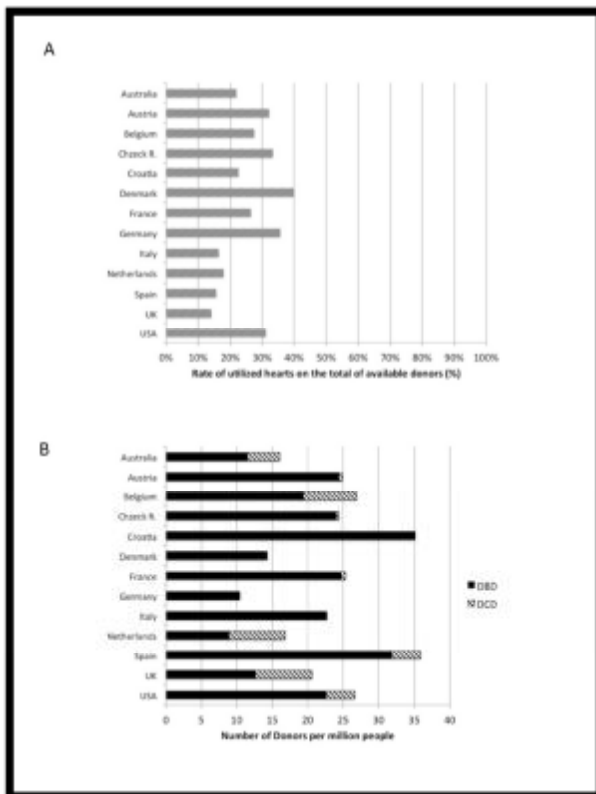


Figure 1. Rate of hearts successfully transplanted over the total of available donors (panel A) and number of transplants from DCD donors (white section of the bar) over the total of donors procured per million persons (Panel B) in 2014, in countries with major solid organ transplant programs. Data derived from the Council of Europe Newsletter

https://www.edqm.eu/sites/default/files/newsletter_transplant_2015.pdf

L. Potena Transplantation. 2016 Dec;100(12):2521-2523

In this context there is an urgent need to improve the number of hearts retrieved to fulfil the increasing need for heart transplantation: the advent of LVAD technology, revolutionized the management of advanced heart failure, favourably impacting HT waiting list mortality, thus progressively increasing the number of patients needing a transplant and overall increasing the

cost per saved life given that most of the patients will be candidate to two major surgical procedures.

Scout project – background and results

The SCOUT project was conceived to counteract the decline in HT numbers and to improve the number and quality of hearts procured. The idea of the SCOUT project derived from the lack of information and expertise in cardiovascular management that was available in the average donor ICUs in the UK. The hypothesis was that the rate of accepted hearts might increase if transplant surgeons received more detailed information regarding the function of the heart and if the donor was managed in order to reduce as much as possible heart injury in the context of the brain dead donor.

To achieve these goals, trained personnel was sent from the transplant centre to donor ICUs within 2 hours of road travel as soon as a potential heart donor is available. The Scout team become in charge of the donor care and performed serial diagnostic and therapeutic procedures, including trans-oesophageal or trans-thoracic echo, right heart catheterisation with Swan-Ganz, along with careful titration of vasoactive drugs and fluid resuscitation. etc.

The project has been designed in form of feasibility study rather than a proper prospective trial. This conception provided some limitation in data collecting and in scientific study design. This feasibility study was conducted in two phases: 1) a feasibility study to explore whether the Scout service could be established; 2)

a second phase to identify how the Scouts made an impact on heart donation and what might be the best model for building Scouts in to a commissioned service

Overall, Scout data analysis results, general discussion and separate interviews with Centres highlighted a positive outcome of the Scout project in the following points:

- Scouting is overall a feasible and successful activity. Despite lack of strong statistical evidence, there is a positive impact of scouting on the utilization of offered hearts
 - There was a significant increase in heart transplant during the Scout project period, associated with an overall increase of all organ transplants. In the pre-Scout period (2010-12), heart was retrieved from only 21.5% of all brain dead donors, while in the 2013-15 period heart was retrieved from 24.5% of all brain dead donors. This accounted for about 10% relative increase in the rate of organ utilization. The rate of increase is more evident if considering only scouted zones.
- The improvement is mainly believed to be driven by the standardized and trusted information provided and retrieved by the scouting team.
 - Transplant surgeons appeared more confident in receiving information from trusted personnel, who guaranteed more active interaction and could provide more detailed diagnostic data regarding the status of the organ. Data analysis and interview with the Centres suggest that in the decision making process of organ acceptance the weight of diagnostic information is greater than that of donor management *per se*.
- The presence of the scouting team overall improved the donation process and the work of the other personnel involved (SNODs etc.)

- The intensive care clinicians and Specialist Nurses for Organ Donation found the presence of a scout to be beneficial to the care of the donor. There is a slight trend towards improved retrieval of lungs and abdominal organs from Scouted donors
- Presence of scouting team relieves workload from the ICU personnel, in particular small ICUs, which overall provide about 50% of donors in UK
 - Most of intensivists did not have the necessary skills or resources to undertake specialized diagnostic evaluation and cardiocirculatory management. In addition to relieving the pressure on ICU teams during the hectic management of the donation process, scouting team provided help to address some issues with ICU Units failing to refer potential donors
- The logistics and organization beyond the Scout system favoured constructive networking across transplant centres.
 - Donors scouted from a team of a certain Centre could be offered to another Centre. Communication between personnel of different Centres during the donation process helped to improve the homogenization of clinical practices

In addition to these positive outcomes the Scout project also highlight several critical points that need to be addressed.

- No specific and additional funding was provided to the Scout project, thus impacting the completeness of data retrieval and management of teams
 - Transplant teams are often undersized as compared to the amount of workload they are required to do. Lack of dedicated funding for the Scouting negatively impacted the quality of data retrieved and in some circumstances the participation of some centres to the project.
- Rules of engagement to send a team were not uniformly followed by the Centres – this in some circumstances negatively impacted relationships between SNODs and scout team
 - Critical issues in the relationship between scout teams and SNODs were raised in some circumstances where scout teams were constituted by medical personnel
- Despite the scout approach improved donation rate, the number of heart transplants in UK remain about the half of the average pmp than in continental Europe

Based on the results of the data analysis, the interviews with the Centres and the experience gained in our Centres we would suggest the following recommendations

There is a strong support and overall suggestive evidence that the scout concept may significantly improve heart transplant numbers, and thus need to be somehow continued and institutionalized.

The system as it has been tested in the pilot studies with a specialized team attending all donors 24/7 does not appear to be feasible, in particular in light of the need of specific funding. On the other hand, adequate funding for the system as it is now does not appear to be economically sustainable.

The review of the process highlighted that there is a major lack of donor diagnostics performed by the donor centre with cardiac ultrasound mostly unavailable and even 12-lead EKG not available in all donors. In this context, floating Swan-Ganz may provide useful surrogate measurements in particular when TOE is not available. On the other hand, others devices currently used in most ICU for hemodynamic management such as the PICCO device coupled with CVP measurements may represent a valid alternative to the floating catheter. Utilization of this technology would allow a more direct involvement of ICUs personnel in donor management/diagnostic assessment.

Specific paramedics teams need to be trained for the scouting procedures, and specific benchmark skills should be identifies, leaving out the involvement of fellows physicians/surgeons. Scouts need to be specialists who are committed to this role. They should be given special training in diagnostic and therapeutic donor management, with accompanying outcome and performance indicators.

The role of the scout and of the local ICU personnel in donor management should be redefined, in light of the experience of the single ICU (i.e. complete patient management in small peripheral ICUs vs. active collaboration in large ICUs).

Specific subpopulation of donors may be identified to potentially gain a larger benefit from the scout management. For example in a young donor with normal heart scouting may not provide a significant improvement – the organ is likely to be utilized anyway. In the case of a 50y old donor with CV risk factors and high dose of inotropes, management and standardized diagnostic workout may clearly improve the chance of organ utilization

The availability of novel technologies for organ transportation/reconditioning should be taken into account in setting up a novel scouting system. Technologies might also impact on the potential for donation and reduce ischaemic damage. However, it is unlikely that these will remove the need for the Scouting role. The two approaches are complementary, not exclusive.

The location of the Scouts needs to be decided by NHSBT. They could be linked to hospitals, NORS teams, SN-ODs or a completely separate commissioned service. This would need to be decided through consideration of the practical, logistical and resource issues.

There appeared to be a strong level of camaraderie and support across all the teams for implementing the Scout in to standard practice. This needs to continue and NORS teams, Transplant Units, SN-ODs and the intensive care community need to work collaboratively to build an effective, robust service.

In summary, the development of the Scout system should be based on a nationally agreed protocol, which should include:

- Attendance criteria
 - Donor characteristics
 - Travel time/ area
- Competency
- Role of the scout
- Interaction with SN-ODs and ICU staff
- Interaction with NORS and Transplant teams

There should be nationally agreed Key Performance Indicators for the Scout service – both on a national and local level, which are kept under regular frequent review. This will enable monitoring of the effectiveness and impact of the Scouts and inform any future amendments to the provision of the Scout service.

In addition to specific recommendation regarding the Scouting system, following the general discussion with the transplant teams, we feel appropriate to provide further suggestions regarding the organ utilisation and allocation system in general

There needs to be succession planning, with younger surgeons coming in to the system.

There should be focussed discussions to understand the reasons behind organ declines. This should be collected in a centralised, general manner. Data should be discussed locally and feedback given to inform national policies.

Resources were quoted as one of the restraining issues on organ utilisation, both in terms of human resources and Unit capacity. This will continue to be an issue going forwards as transplant rates continue to rise.

If want to save more lives, the healthcare system needs to continue to invest in the service. There needs to be reassurance from the authorities that they will support a move to increase organ utilisation.

There should be consideration of whether the CUSUM measures could be improved to better manage risk adverse behaviour. Quality control is important, but should not impede best or innovative practice or appropriate risk-taking.