BMJ

BMJ 2011;342:d2483 doi: 10.1136/bmj.d2483

EDITORIALS

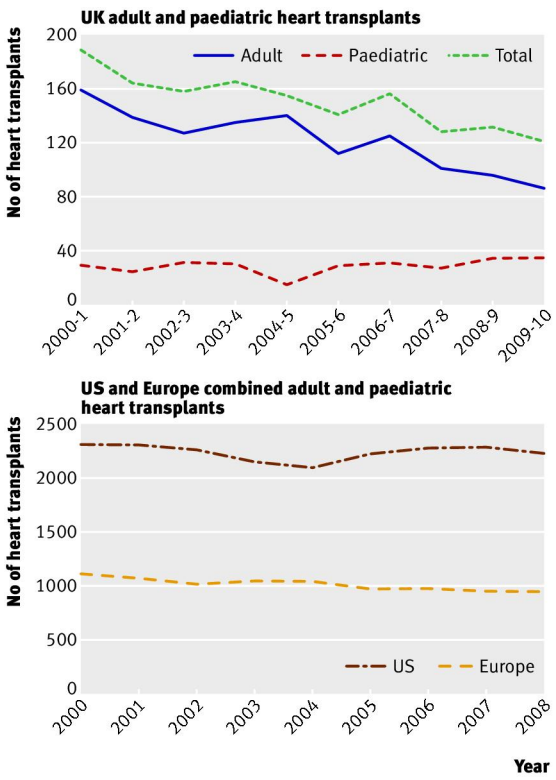
The decline in heart transplantation in the UK

Means that left ventricular assist devices should be considered for long term support in advanced heart failure

Guy A MacGowan *consultant cardiologist with major interest in heart failure*[1], Gareth Parry *consultant physician*[2], Stephan Schueler *consultant cardiothoracic surgeon*[3], Asif Hasan *consultant paediatric cardiothoracic surgeon*[3]

[1]Department of Cardiology, Freeman Hospital, Newcastle upon Tyne NE7 7DN, UK ; [2]Department of Cardiothoracic Transplantation, Freeman Hospital ; [3]Departments of Cardiothoracic Surgery and Transplantation, Freeman Hospital

Heart transplants have offered a second chance of life for patients with advanced heart failure who fail to respond to optimal medical treatment and other treatments for more than 30 years in the United Kingdom. These people form a very small proportion (about 200) of the total number of people in the UK with heart failure (estimated at 750 000 currently). In patients with refractory heart failure who are relatively free of comorbidities, transplantation is seen as a final treatment option by clinicians who regularly treat heart failure. Survival at 10 years after transplantation is about 50%,[1] and this is far better than for patients with advanced heart failure, whose survival is often less than 50% at one year.[2] However, despite the announcement of a record high number of UK donors available for organ transplants (which includes all organs, not just hearts), heart donation continues to decline.[3] Heart transplant rates (separated from rates for other organs) have consistently declined over the past 10 years, with a 46% reduction in that time period. Furthermore, this problem seems particular to the UK (figure).



UK and international heart transplant numbers. Top: Data are courtesy of UK Transplant; bottom: adapted from Stehlik et al,[1] with permission from Elsevier

Statistics available from the International Society of Heart and Lung Transplantation put this decline into an international perspective, and they show that in Europe and the United States rates are steady or are only marginally declining.[1] Several important questions need to be answered, such as why have the

guy.macgowan@nuth.nhs.uk

reported increases in donors not translated into more heart transplants?[4] One explanation is the relatively small number of intensive care unit beds in the UK.[5]

What are the consequences of the reduced number of heart transplants? The first is that the use of left ventricular assist devices as an alternative treatment for end stage heart failure needs to be increased. These devices are mechanical pumps that can restore the output of the left ventricle in patients with refractory heart failure. Newer generation devices produce survival rates comparable to transplant at one to two years, so could be considered as an alternative in some situations. These devices can be used as a "bridge to transplantation"—that is, supporting a patient until a suitable heart becomes available (currently funded in the UK)—or, as approved in some countries (such as the US and some European countries, but not currently in the UK), as "destination therapy," where the patient is not considered a suitable candidate for transplantation and receives long term support with the device.

Trials show that destination therapy can prolong survival in end stage heart failure. In the first Rematch trial the Heartmate XVE pulsatile device improved survival relative to medical treatment in patients with advanced heart failure not suitable for transplantation.[2] In this study, the risk of death from any cause was reduced by 48% in the patients receiving a left ventricular assist device compared with the medical treatment group (relative risk 0.52, 95% confidence interval 0.34 to 0.78; P=0.001). In Rematch 2 the Heartmate XVE device was compared with the newer continuous flow Heartmate 2 device.[6] Patients with continuous flow devices had better survival rates at two years (58% v 24%; P=0.008). Adverse events and device replacements were significantly less common in patients with the continuous flow device. Quality of life and functional capacity were not significantly different between the groups.

On the basis of these trials, left ventricular assist devices were recently recommended for destination therapy in guidelines from the European Society of Cardiology.[6] Although the long term outcomes with left ventricular assist devices are not as good as with transplantation, the lack of a "supply" problem with ventricular assist devices makes them an attractive alternative.

The second consequence of the reduced availability of heart transplants is that we need to reconsider which patients should be prioritised to have the few heart transplants that are performed. Patients with heart failure who are not suitable for left ventricular assist devices but might benefit from heart transplantation should be the focus of heart transplantation in the future. For example, patients with refractory right heart failure or restrictive cardiomyopathy may fare better with transplantation as a primary strategy because persistent right heart failure will remain after implantation of the left ventricular assist device.[7] People with ventricular assist devices who develop serious complications in some situations might also be best served with a transplant. In addition, adults with congenital heart disease who develop refractory heart failure are often not suitable for a left ventricular assist device given their complex anatomy, so transplantation is the only option. Although there is a perception that these are high risk patients for transplantation, a study found that with increasing experience in a single centre, five year survival can increase from 50% to 69%.[8] These complex patients are best managed in specialised centres with expertise in management of both congenital heart disease and transplantation.

The third consequence of the reduced number of heart transplants is that it is difficult for surgeons in the six UK units to maintain their expertise, so the number of units may need to be reduced. This has recently been accepted, and in the near future the Department of Health is going to conduct a review of cardiothoracic transplantation in the UK. This review must recognise that the use of long term ventricular assist devices for destination therapy is an essential service that needs to be developed in transplant centres as a consequence of the falling heart transplant numbers, and that there needs to be adequate provision of heart transplantation for adults with congenital heart disease and heart failure.

Competing interests: All authors have completed the Unified Competing Interest form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and declare: no support from any organisation for the submitted work; GAM has grant funding for research (Heart Research UK Translational Research Grant), and has received honorariums for invited lectures (Pfizer and Servier); no other relationships or activities that could appear to have influenced the submitted work.

Provenance and peer review: Not commissioned; externally peer reviewed.

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Cite this as: *BMJ* 2011;342:d2483