

Costing statement: machine perfusion systems and cold static storage of kidneys from deceased donors

The guidance on machine perfusion systems and cold static storage of kidneys from deceased donors (NICE technology appraisal guidance 165) is unlikely to result in a significant change in resource use in the NHS.

Recommendations

- Machine perfusion using the LifePort kidney transporter and cold static storage using Belzer UW storage solution or Marshall's hypertonic citrate solution are recommended as options for the storage of kidneys from deceased donors.
- The choice of storage method should take into account clinical and logistical factors in both the retrieval teams and transplant centres. In situations where different storage systems are considered equally appropriate, then the least costly system should be used.

The technologies

In the UK there are two established methods of preserving kidneys before transplantation: hypothermic machine perfusion and cold static storage.

Machine perfusion systems continuously pump cold preservation solution through the kidney. The LifePort kidney transporter is a portable machine perfusion system which can perfuse a single kidney and run without supervision. The cost of an individual transporter is about £10,700¹. They are normally purchased in pairs, one for each kidney.

¹ Machine perfusion systems and cold static storage of kidneys from deceased donors. NICE technology appraisal guidance 165 (2008). Available from www.nice.org.uk/TA165

Information supplied by the British Transplantation Society (BTS) indicates that in the UK between 2000 and 2007, only about 2% of kidneys from deceased donors were stored using machine perfusion.

In cold static storage, the kidney is flushed through with a sterile preservation solution and is kept on ice in a box before transplantation. Two preservation solutions are widely used in the NHS for cold storage: Marshalls hypertonic citrate and Belzer UW storage solution. The cost of 1 litre of Marshalls hypertonic citrate solution is about £9.60¹ and the cost of 1 litre of Belzer UW is around £116¹.

Information from the BTS indicates that in the UK from 2000 to 2007 about 74% of kidneys from deceased donors were stored in Marshall's hypertonic citrate solution and most of the remainder (23%) with Belzer UW storage solution.

Numbers affected

At the end of 2006 43,901 adults were receiving renal replacement therapy in the UK², and there were 6220 patients on the transplant waiting list². There are 20 adult kidney transplant centres in England and one in Wales¹.

In the UK in 2006, 1403 kidneys from deceased donors were transplanted.

Resource impact

Given the small number of centres in England undertaking kidney transplants and anecdotal evidence suggesting that a number of centres already have access to the LifePort transporter, we do not anticipate this guidance to have a significant impact on resources at a national level. The resource consequences of implementing this appraisal will need to be investigated at individual transplant centres.

² The UK Renal Registry Report (2007). UK Renal Registry, Bristol UK
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