



Elizabeth Blackwell Institute Research for Health Scheme 2015

Stage 1 - Call for Challenges Application Form

Name	Dr Wesley Hayes
Challenge Title (max 20 Words)	
Develop a method to measure kidney transplant perfusion in real time	
Please describe the specific problem which needs addressing	
<p>The greatest risk to children's kidney transplants in the immediate postoperative period is graft thrombosis. Optimising perfusion of the transplant kidney reduces this risk. Currently, there is no technique available to continuously measure kidney transplant perfusion in real time. Ultrasound examination with Doppler assessment of vessel flow can be used to assess flow at a single point in time, but cannot be used to continuously track changes in perfusion over time.</p> <p>Near infra-red spectroscopy (NIRS) has been successfully used to monitor oxygen saturations in other organ systems with positive results. It has not yet been used to monitor perfusion in children's kidney transplants.</p> <p>Given the need for a technique to monitor kidney transplant perfusion in real time, NIRS monitoring of kidney transplants should be evaluated. If successful, this would potentially be used in every kidney transplant in UK to allow real time adjustments to patients fluid management to optimise perfusion, and urgent surgical intervention at the point of loss of graft perfusion in the immediate post transplant period.</p>	
How does this issue impact on you, your colleagues and your patients?	
<p>The impact for patients, their families and clinicians is very significant. At a recent multidisciplinary transplant meeting, the urgent need for a reliable method to monitor kidney transplant perfusion in real time was highlighted.</p> <p>Living related donor kidney transplants have been lost to graft thrombosis. These losses may be preventable if a method of real time perfusion monitoring is developed.</p>	
<p>Can you estimate how many patients or staff are affected by this problem?</p> <p>Can you describe any associated financial implications for the NHS or patients?</p>	

(Don't worry if you are not able to answer this question at this stage – it is not compulsory)

Catastrophic loss (of a transplant kidney) to approx. 5 children per year in the UK could potentially be prevented.

All 10 UK paediatric renal transplant centres would potentially benefit.

NHS cost savings would come from reducing the medical burden of dialysis and re-transplant for children who lose their graft to thrombosis.