Hypothermia in DBD donation

In 2015, Claus Niemann, Darren Malinoski and colleagues published a clinical trial from the west coast of the USA in which they randomised 370 donors to being maintained either at 34-35°C (hypothermia, n=180) or 36.5-37.5°C (normothermia, n=190) (NEJM 2015;373:405-14). The aim was to maintain the randomised temperature for a minimum of 16 hours. The endpoint of the study was the incidence of delayed graft function in kidneys transplanted from those donors. 572 patients had kidney transplants from the donors (285 hypothermia, 287 normothermia). The incidence of delayed graft function (dialysis in the first week) was **28% in the hypothermic group**, and **39% in the normothermic group** (odds ratio 0.62; 95%CI 0.43,0.92; p=0.02).

The effects on the other organs retrieved have not been published, but personal communication with Claus Niemann suggests there was no effect on the outcomes of cardiothoracic organs or livers.

A retrospective analysis of another trial where donor temperature was recorded has confirmed the randomised data from Niemann's study (Schnuelle et al. Am J Transplant 2018;18:704-14).

We retrospectively looked back at UK organ donors in FY 2016/17. The donor's temperature at the time of donation is in the table below. 7.2% of donors fall into Niemann's hypothermic category by chance, and 36.9% into the normothermic category.

Temperature range °C	Frequency	Percent
<34	12	1.4
34-35 "Hypothermia"	60	7.2
35-36.5	364	43.9
36.5-37.5 "Normothermia"	306	36.9
>37.5	84	10.1
Unknown	4	0.5

We would like to conduct a follow up study to the Niemann study, to see whether a period of DBD donor hypothermia (34-35) can increase eGFR at 12 months, rather than simply reduce delayed graft function. We do not envisage any deleterious effects on the other organs, but they will be followed up closely. In addition, utilising the QUOD tissue bank, samples will be collected before and during the randomised intervention, in addition to samples immediately pre-retrieval, to explore further the mechanisms behind the observation. We will not prescribe a period of hypo or normothermia, but rather it will start from the point of consent to donation up until retrieval, and we can then analyse effects at different periods of cold/normothermia.

In addition to exploring the effects of donor hypothermia, we believe this study will open the door to further studies on organ donors prior to organ retrieval.

I would be grateful if the Advisory Group would consider this proposal and let me know if there are any concerns that we need to explore.

Chris Watson, on behalf of the investigators
21st April 2018