

**NHS BLOOD AND TRANSPLANT  
ORGAN DONATION AND TRANSPLANTATION DIRECTORATE**

**NATIONAL RETRIEVAL GROUP**

**Contaminated Ice**

A number of instances of contaminated ice in transport boxes were reported, and coalesced into a single Incident. Following initial discussion, Prof Kate Gould, from Newcastle reported her investigations. Her lab had identified positive cultures from the ice surrounding thoracic organs, and she then instituted routine culture. She then described the course of events in Newcastle, and came up with some recommendations

In Newcastle 214 samples were tested of which 76 were positive. They were mostly gram negative environmental bacteria but the numbers are significant. The ice from machines is not expected to be sterile but if the machine is maintained and used correctly the numbers of bacteria should be insignificant. When contaminated ice from the Freeman Hospital was investigated, she discovered that the ice machines were not being maintained and at the bottom there was a nasty brown sludge. Ice machines were replaced and the cardio theatre team was given a protocol to keep it clean, but at that stage many other users collected ice from the machine.

After 2 years she again noted positive samples and the machine is currently being replaced again. This time there will be one in the clean area of theatre, reserved for transplants and another kept in the dirty corridor for the adult and paediatric ITU's.

It has been argued that it does not matter that the ice is contaminated because it is not in contact with the organs. Never the less, the bags are opened in theatre and the heater cooler incident has alerted us to the possibility of low level aerosol formation causing serious infection. Prof Gould has contacted Microbiologists in the other centres when she has had positives from them. This network has been very aware of the problem and she has supplied centres with the local SOPs because their ice machines were in a similar state to the Freeman's in 2014.

Finally, the ice from machines frequently grow *Mycobacterium chelonae*. This is not surprising because it is in the Northumbria water supply. Other supplies may have other *Mycobacteria* and this was the original source of *M.chimeriae*. The sequelae of the *M Chimeriae* infections are well known to the whole cardiothoracic community

It is recommended that transplant retrieval teams use ice only from machines maintained to a high standard and follow the device manufacturer's instructions for care/maintenance, and test approximately monthly. All centres should have their local ice machine maintenance/cleaning protocol. Although there have been no direct links between positive ice cultures and post-operative infections in transplant recipients, Prof Gould's view is that it is only a matter of time before such infections occur. The issue of atypical mycobacterial contamination is a particular concern, and the M Chimeriae experience should serve as a warning. The only way to prevent any risk from ice from ice machines is to use sterile ice which is more expensive.