

From: Cullen, Brian (IHRD)  
Sent: 06 March 2012 15:56  
To: [REDACTED]  
Subject: Adam Strain  
Importance: High

Dear Doctor Coulthard

Counsel to the Inquiry would be very grateful if you would address the following:-

You state at p.26 of your original report to the Inquiry dated 4th August 2010 (Ref: 200-002-049) that:

“Adam was routinely dialysed overnight with an automated PAC-X peritoneal dialysis cyler using dialysate containing 1.36% glucose. This fluid is the nearest to isotonic (that is it is the most similar in osmolality to plasma of all the available fluids), and is designed to ultrafiltrate gently.”

On the next page (Ref: 200-002-050), you state:

“An additional feature of PD [peritoneal dialysis] is that it also tends to correct any imbalances that may exist in the plasma sodium. This is because it contains sodium at normal plasma concentrations, and thus sodium will diffuse down its concentration gradient from fluid to plasma if the plasma sodium is low, or from the plasma to the fluid if [sic] they are hypernatraemic. Thus, the plasma sodium in the morning after an overnight dialysis session is almost guaranteed to be normal if the child starts off with a near-normal value.”

In addition, Dr (now Professor) Maurice Savage stated in his deposition to the Coroner that Adam’s “peritoneal dialysis was performed as usual – 750ml fluid volume 1.36% Dextrose solution. He was given 8 cycles before going to Theatre at 7am.” (Ref: 011-015-109) At this time Adam normally received 15 cycles overnight (Ref: 016-015-034)

Please answer the following queries:

1. What was the sodium concentration of the fluid used in the dialysis of Adam prior to his renal transplant operation on the evening of 26th/27th November 1995? Explain the reasons for your answer.

2. So far as you are aware, state if, in 1995, there were any other versions used in U.K. hospitals of "1.36% Dextrose solution" which contained alternative concentrations of sodium.
3. How does your answer above relate to your comments that the dialysis fluid used:
  - a. "is the nearest to isotonic"
  - b. "contains sodium at normal plasma concentrations"?
4. What would you expect Adam's serum sodium value to have been after dialysis on "1.36% Dextrose solution"
  - a. After 8 cycles if his serum sodium was 139mmol/l at 9.30pm, he was started on dialysis at 10pm and stopped dialysis at 6am
  - b. After his usual 15 cycles overnight. Please indicate if this would depend on any other factors.

I look forward to hearing from you.

Kind Regards,

Brian Cullen

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