DR TED SUMNER, SEPTEMBER 9 2004

Firstly Dr Sumner if you could explain just why can intravenous fluids can be dangerous?

Well intravenous fluids can be dangerous if they are given too great or too long or if it's the wrong sort of fluid. And it's particularly if there are abnormal losses from, say, vomiting and diarrohea where the sodium chloride is being lost, saline is being lost effectively. So that if that isn't replaced by saline then the saline in the blood becomes diluted and then that's when the problem with dilution hyponatraemia occurs and the subsequent brain swelling if a larger volume has been given then that can cause oedema of the brain and oedema of other organs like the lungs. So of course it is particularly important in children that the right volume is given and that's usually on the body weight basis. So those are the main reasons why they can be dangerous.

And how long has this knowledge been around for?

Well I think there's been a resurgence of interest in the problem of hyponatraemia in the last ten years. But I learned the basics of it when I was a medical student, as we all did, and that was in the 1960's. We learnt how we should measure the input in fluids and the output which is the abnormal losses in addition to that. Forty years is my professional lifespan.

The knowledge of this has been around for forty years?

Indeed.

You said there's been a resurgence in the last ten years. Is there any particular reason for that?

Well yes because there is an interest in the United States where they have always been very very free with intravenous fluids. There was a very disturbing incidence of dilution of hyponatraemia which killed countless children and young adults and it was publicized by somebody called Professor Arrieff from San Francisco and he put it in the medical journals in the early 1990s and it stems from that really, and also a wider acceptance that this is a major problem.

So to get to your involvement and how you have been in Northern Ireland over the past eight years, how did you become involved in Northern Ireland in these research cases?

Well I was asked by Mr Leckey, the Greater Belfast coroner to look at a death in the Children's Hospital that was associated with fluid management and I'm a so-called expert in this field and he asked me to look at that and because the mechanism of that death was hyponatraemia then when there were other cases he asked me to look at those too.

So the first one you were involved with was Adam Strain which was back in 1996

That is correct.

And that was the first time you came to Northern Ireland to deal with cases like this and you were involved since. But what has struck you about the cases you have been involved in Northern Ireland?

1:04:32

Well particularly the last three cases, I felt that there was a thread of inadequate knowledge about fluid management in children generally. I felt that they were not making the correct calculations for the volumes, they were not writing proper prescriptions for the fluids and the way these should be administered, and I think that they were using the wrong type of fluid to replace abnormal losses which were vomiting and vomiting and diarrohea.

Did that surprise you?

Well what surprised me was that it seemed to be happening in repeated occurrences, that's what surprised me.

Children were continuing to die from this very fundamental mistake?

Yes.

Should any of these children have died?

I think with the knowledge that we have the first three cases should not have died.

1:05:48

That was Adam Strain, Lucy Crawford and

And Raychel Ferguson.

In other words none of them should have died.

In my opinion no.

Why did they die?

You mean .....they died from hyponatraemia based on, in my view, ignorance of the right sort of fluid to give in those circumstances, the correct volumes, but also there were system errors in terms of poor communications, the weight and so on that these should have been administered.

Ignorance and poor communication?

Yes.

What is that. You see that as a vein through each of these three cases?

Yes.

And that really is over a time span of 1986 right through to 2000 to 2001. There didn't seem to be any learning?

No.

We're looking particularly at the death of Lucy Crawford. What did you think when you came to her case and you got the notes from the Erne Hospital, what struck you about her case?

Well this was an example, a very very sad case. She was a fit little girl, eighteen months old, who had gastroenteritis. There was no formal assessment of the degree of dehydration. There was no calculations as to what possible fluid deficit there was. There was no proper prescription for the fluids given. They were given in either the wrong volumes and using wrong fluids.

Were you surprised again to read that this had occurred again in another Northern Ireland hospital?

Yes I was. It isn't, as I say I don't think it's a problem confined to Northern Ireland. It does not seem to be that. There are pockets in the rest of the United Kingdom there that there is I think a lot of ignorance about fluid management. I said to Mr Leckey in the Coroner's Court that it seems to be the Cinderella area of medicine that people either think it's boring or it's not important.

For the family of Lucy Crawford, particularly for her parents, they lived under the wrong impression for four years that Lucy had died of gastroenteritis. That was quite striking for us coming to this that they were living under that illusion and that no-one had actually told them exactly what had occurred. Lucy didn't die of gastroenteritis.

No, she died of dilution of hyponatraemia which caused brain swelling and this caused damage to the brain stem, and of course she did have gastroenteritis which necessitated the intravenous fluids that ultimately killed her.

What do you think of the level of care that Lucy received at the Erne hospital?

Well, I think that as I've said, I think that they didn't use the right fluids and they gave too much and there was poor communication about exactly how much she was having.

Murray Quinn

The Trust involved in Erne hospital carried out a review based on a report by a Dr Marie Conway which was inconclusive. Did that surprise you that that report was inconclusive?

Yes it did because it's quite patently clear from the notes that the volumes and fluid given were too great and that they were the wrong sort of fluid to replace abnormal losses, it's quite clear to me from the medical notes.

Is there any explanation for why they reached the inconclusive decision?

Well the only reason I can think of is that he was also under the impression that this wasn't bad management.

But you didn't get that from the notes?

No, no, and also I have to say there was another independent reviewer of the notes who was in the Coroner's Court who agreed with me.

Lucy's death, when I talked to them, her parents were in the dark about what exactly had killed her. Is that a particular danger in these types of cases?

Well I think it's a hard question to answer because I think in Lucy's case there was this misunderstanding and initially there wasn't an inquest because of the diagnosis of gastroenteritis, but it wasn't until somebody else discovered the similarity between Lucy's death and Raychel's death that they held an inquest and then of course it was patently clear that this was the cause of death.

But the danger is staring us there that because it wasn't detected Raychel Ferguson died in very similar circumstances. If the lessons had been learnt from Lucy's death could Raychel Ferguson still be alive today?

Can we just stop a second here. What was the time involved between the two deaths?

Lucy died in April 2000, Raychel died in June 2001, so there was fourteen months between Lucy's death and Raychel's death?

What I was wanting to say was, now I know there was fourteen months, fourteen months is quite a short time to do all the stuff and to disseminate the knowledge, set up a working party, which they did do, that's why I needed to know, it is quite a short time, so if they had done and had known that that was the case then maybe Raychel would not have died.

Yes. If I structure the question on that, if there had been sufficient warning from Lucy's death, and that had been disseminated, if there had been absolute recognition of what had occurred in Erne hospital when Lucy died and warnings had been sent out, could Raychel Ferguson's death have been prevented?

I imagine it could, yes.

And that emphasizes the critical nature of hospitals to disseminate learning from ontoward events on the wards?

That is true but I do think we're getting better at doing that. I do get the impression that a new treatment that someone has introduced .....or the risk management departments of the hospitals ensure that the loop is then closed to stop an incident happening again or to ensure that the treatment had been an issue is successful. I think we're getting better at it all the time and I do think that the initiative that was undertaken by the Chief Medical Officer of Health in Northern Ireland to work out fluid protocols for children was a very good initiative and I said that publicly in the Coroner's Court.

You think that addresses a lot of the concerns that you would have?

Well I don't think that things happen overnight. I do think there are real learning curves in this case for instance but it's a step in the right direction certainly.

After the last inquest you were involved in you wrote a letter of your concerns about what you had witnessed in the ~~group~~ court. Can you tell us a little about that?

1:14:56

Well I'd been to Northern Ireland four times to inquests as an expert witness to help Mr Leckey establish the cause of death in these four cases, and I thought that enough was enough and it evolved from that situation and before I did it I really thought that I had to get closure on this and that I express formally our anxiety that there were problems over those years of ignorance of fluid management and I wanted my views to be known and that with a process in place they would improve the level of knowledge and stop these things happening again, just really to ensure in my mind that I'd done everything I could really. 1:15:59

Is that an indicator of the level of concern that you have had over the past eight years of coming back to Northern Ireland time after time, dealing with these sorts of cases?

Well there was in my view an underlying poor level of understanding of fluid management in children in terms of how you do it, and I just wanted to make sure that things were in place that could improve that.

Were you struck, given that you were someone who worked in Great Ormond Street for many years, and you've spoken about your experience in this field, were you struck about the level of misunderstanding about fluid management in Northern Ireland in these cases?

I was very very surprised by the level of misunderstanding and of course I've learnt very intimately about these four cases so I focused on those. I have heard of cases elsewhere in the United Kingdom of course which I haven't followed so closely because I hadn't

been involved, but it isn't a problem unique to Northern Ireland, but it did seem to me that these four cases which I was very heavily involved in there was this lack of, and this is what I felt at the time, do something, and at least alert the powers, if they didn't know already.

Can I ask you just a further question, and don't feel you have to do this, can I ask you about your reaction to what was going on in the Court. From what we could see was that you had May Crawford and Raychel Fergusons's mother all coming to the Court searching for answers that they hadn't been given, and it was almost as if that was adding to the problems they were having as the result of the death of their children. Were you struck by that in the Court the way they had been dealt with by the hospitals?

Well I was surprised by, sorry can I just think about that, sorry.

It was almost as far as we could see that they were coming to the inquest looking for answers that maybe they should have been given at the hospital?

Yes, okay.

In terms of the inquest and of the mothers in particular, that they attended the inquest looking for answers?

Yes that seemed to be the case that they had not been told about the cause of Lucy's death but of course that is what the Coroner's Court is there for to try and establish a cause of death and that it did very dramatically I think, and the Crawfords now do sadly have the answer to Lucy's death, but nonetheless, I did think it strange that in those years that they had not been told what had happened.

Could you characterize for us just how ill Lucy was when she arrived at the hospital and how that dramatically changed in the ensuing few hours?

Well she was poorly. She had gastroenteritis. She had a mild dehydration. She wasn't taking anything very much except little sips I think, but she would have been expected to have improved and recovered.

Without any great stay in hospital or any great .....

It is difficult to predict exactly how long but a couple of days and then she could have gone home maybe even. This gastroenteritis usually last forty-eight hours.

So there was nothing very worrying about her condition when she arrived at hospital. I mean she was no steps of imagination seriously ill, is that what you're saying?

Well she was ill enough to be mildly dehydrated and for them to consider giving her intravenous fluids which is not at death's door but ill enough to require that. She wasn't keeping anything down, or very much down.

It is a very sad case?

It is a very sad case, very sad because as I said earlier she was a normal little girl, eighteen months old.

And there was no doubt that she died as the direct result of the treatment she received in Erne hospital?

She did.

Is there anything further you don't think we have covered or is there anything that you think of. Sorry those things that ..... We should have been trying to structure the programme on paper in the last few weeks .....those little clips.

The sum total of this case is that went in, a fit child, with a mild illness although ill enough to require treatment and she died as a result of that and that is the case.

For me we have to get all that down so that somebody coming at this, an audience coming at this, gets that very clearly.

It is a very complicated business this because with both Raychel and Lucy in that one died after the other but their inquests were the other way round, and so it confused me for ages and what was possible to happen in that period of time.

You were just home from Raychel's inquest. You had been back here in London having been and given your .....experience in that and within weeks, would that have been the case, within weeks you got a phone call from John Leckey to say there was another one now.

Yes. When you say conceal do you mean conceal. It's easier to detect or do you mean conceal.

Are you saying are we suggesting that someway that because it was as a result of neglect and because the death was put down to gastroenteritis is it easier for hospitals to decide not to be .....

I couldn't answer that. I don't know what went through their minds but also I wouldn't, I mean .....

You wouldn't suggest that they had .....

I don't think that I could suggest that they deliberately concealed it because I don't think they did. I think that they didn't really know what they were doing in terms of volumes and the type of fluid and also we know that they measured the sodium that was 10mls per litre lower at the time of her respiratory seizure and respiratory arrest than had been measured before they started the IV so by definition that was hyponatraemia which was when they started to give the saline to .....

Yes that would be a good question to answer. It has been suggested that Lucy and Raychel's deaths were idiosyncratic. It was something to do with their physiological make-up. Is there any truth in that statement?

In my opinion and in the opinion of others I have discussed it with, this is not the case that any child would have reacted in the same way in the same circumstances. That children are at risk when using abnormal volumes of saline by vomiting or diarrohea if they are given low sodium containing solutions intravenously will react in exactly the same way as Raychel and Lucy did.

There was nothing idiosyncratic or physiological in their deaths?

Not in my opinion.

They died as a result of the solution they were given and there was too much of it?

That is my opinion.

There was nothing in their bodies that made them more susceptible to that fluid and the way they reacted?

No.

At 3.00am in the Erne Hospital in Lucy's case she had been given a solution routine up until that point and at that stage they just changed to a normal saline drip. In your estimation what exactly was the reason for that and the people involved in that decision?

When Lucy had a seizure and then stopped breathing and at this stage she was resuscitated and intubated, the trachea was intubated and she was resuscitated and they did measure the blood sodium which was markedly lower and in fact in a hyponatraemia range of 127 mls per litre and in my view they would have realized that she had hyponatraemia and therefore they would need to correct that by giving saline but sadly I think it was already too late because the coning process was well under way and it is often irreversible by that stage but also they gave far far too much, I mean half a litre for over one hour to a eighteen month old child. It was far far too much and would just exacerbate the situation by that stage.

The doctors knew at that point that they had caused Lucy's deterioration?

That would certainly be my reading of the situation because they measured the serum sodium and it was 127, it had been 137 earlier in the day or the previous day and it had fallen by 10mls over that short period of time and this is a rapid fall in the serum sodium and they would realize that. That is the hyponatraemia range of 127 and therefore they would need to try to correct that by giving saline and I am sure those were the thought processes.

Why so much then?

I've no idea.

Is there any mathematical calculation that would give you reason to give an eighteen month old child 500 mls of saline?

No.

And it would just exacerbate the problem as you described?

Yes at that stage.

When you raised your concerns about the cases you had been involved in with Dr Jenkins has his reply dealt with any of your concerns. Do you feel that they have been taken on board?

I do think that things have happened in Northern Ireland and I say publicly in Northern Ireland. It does seem to be very easy to get things done. I mean it's a small community. People know each other and certainly I think several of the initiatives that Dr Jenkins enumerated in his reply to me are very good. There was the Working Party that .....the guidelines and that has been audited with results of compliance. In the Erne unit they instituted formal handovers in the medical and nursing staff for every child having intravenous fluids as shifts change and I think that Dr Jenkins is trying to publicise it widely through the General Medical Council through the Royal College of Paediatrics and Child Health.

Inherent in that there is an acceptance of failure?

In that they have instituted changes based on these cases that would imply that they realize that there were bad practice which needed to be changed, that is the implication.

Final question, a very simple question and a very emotional question but would Lucy Crawford be alive today if she hadn't gone to the Erne Hospital that evening?

Well that's hárd to say. She was dehydrated. It's possible that she could have got worse at home. It's possible that she would gradually have got better. It's impossible to answer that question really but these conditions are usually self-limiting but it's a hard question to answer.

In your career that spans four decades you've been involved in thousands of cases of children who have obviously gone on and lived very normal healthy lives, but has anything struck you as much as the cases of Lucy Crawford and Raychel Ferguson?

Well these were very very sad cases because they were two normal children who have gone on to die through medical mis-management. There are other cases that I have been most intimately involved with so I can only really speak for those cases. I think they were very very sad.

Have they left a mark on you?

On me, they certainly have and their families.

Repeated question:
In your experience in your career what sort of impact has dealing with the cases of Raychel and Lucy had on you. Have they left a mark on you?

They were both very very sad cases. They were both normal children with relatively minor conditions who then went on to die because of suboptimal medical management and it is really very sad indeed. As I say I've been very touched by that and by the families. I have been intimately involved in the whole processes and I'm very touched by it.