GENERAL MEDICAL COUNCIL

FITNESS TO PRACTISE PANEL
(applying the General Medical Council's Preliminary Proceedings and Professional Conduct Committee (Procedure Rules) 1988)

On:
Monday, 13 August 2007

Held at:
St James's Buildings
79 Oxford Street
Manchester M1 6FQ

Case of:

JAYNE LAVINIA MARY DONEGAN MB BS 1983 Lond
Registration No: 2826367
(Day Five)

Panel Members:
Mrs S Hewitt (Chairman)
Mr J Brown
Ms J Goulding
Dr M Goodman
Mr R Grey QC (Legal Assessor)

MR I STERN, QC, and MR S SINGH, Counsel, instructed by Clifford Miller, Solicitors, appeared on behalf of the doctor, who was present.

MR T KARK, Counsel, instructed by Field Fisher Waterhouse, Solicitors, appeared on behalf of the General Medical Council.

Transcript of the shorthand notes of Transcribe UK Ltd
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A THE CHAIRMAN: Good morning.

DAVID ELLIMAN, recalled
Cross-examination by MR STERN (continued)

Q Dr Elliman, just before we move on to the second report I recall that you were going to look at various things over the weekend. Will it be helpful if we cleared the decks before we move on to the second report?
B A Certainly, yes.

Q Do you have anything to say? I think we were dealing with the question of thiomersal, that is one of them?
A There were a number of things. One is that I think (and I am afraid I do not have the transcript) asked a question about the comparison of ethylmercury and methylmercury. I think your question was, "Can we count them as the same?" My
C response was somewhere along the lines of, "I think that would be unwise", or, "No, I do not", or something of…

Q I think you said there was a lot of research on it; that is my recollection. When they can be counted the same, I mean in the sense that the toxicity is pretty much the same, you do not agree that they are?
D A No. I looked up at the weekend, as you can imagine, a report published in 2001 from the Institute of Medicine – are you happy for me to quote or do you want a copy?

Q No. You quote?
A Right. That looked at the whole business about thiomersal vaccines. One of the things they did was review the literature and they came up with a number of studies that looked at different aspects of the handling of ethyl mercury and methyl mercury, which
E some were the same and some were different. All I wanted to say was that it was far from clear that you could count them the same.

Q I do not want to…
A When you are talking about acute toxicity, which is large quantities of them, that is different but we were talking about chronic toxicity.

F MR STERN: Again, I do not want to spend a lot of time on this. There is 2002 paper that has been handed to me this morning. I do not have a copy of it, madam, because I am not sure that this takes us much further, but let me draw it to your attention…

THE CHAIRMAN: Has Mr Kark seen it?

G MR STERN: Mr Kark has not seen it, no; I have only just literally had it myself. It is a research paper and Dr Elliman has… There are two other copies. (*Same handed*)

THE WITNESS: There is indeed a statement in here that there appears to be little difference in the neurotoxicity. As you say it is probably not worth pursuing this because I have got a series of papers that show changing views.

H MR STERN: Shall we leave that then, for both our sanity's sake? We will leave it. In

A any event there are, as you say, different views in relation to it. Coming back to the point that I was dealing with in relation to this, which is the level of thiomersal in what was the injection of DTP?
A Yes.

Q Have you worked out the sort of maths that I was drawing to your attention?
A Yes. I can show you a hand...

B Q Well, if you could just give me a line…
A I can give you a bottom line. The calculation that I have used is the calculation in one of Dr Fletcher's references, Ball *et al*, which seemed an appropriate thing to do as presumably we would not have to discuss whether it was an appropriate calculation. What one has to remember is that what we are talking about is levels of thiomersal in the vaccines in the UK given to UK children.

C Q Yes, of course. I accept that?
A The two things that are different are the levels of thiomersal in the vaccine, but also we have to look at the weight of the UK children because children do not weigh the same the world over.

Q Of course they do not?
D A What I have done (and I have a copy but it has not photocopied very well) is taken the weights from what are called the UK 1990 standards of growth for children in this country. Those children weigh more than children in the US, so when you do the calculation, if you take the – I do not believe it; I have written down my calculation without the conclusion. But if you were to take the fifth centile, so the children who fall on the same line that Ball paper talks about, they have a much higher allowance of mercury; something over 80. If you take the second centile, so that is being more
E stringent, this is lighter children than Ball *et al* were talking about, then you end up with an allowance of 78mg so it is just above, but as I say more stringent than Ball *et al*.

Q I am going to leave that for the moment. In any event, this is a somewhat academic argument because in 2004 the thiomersal was removed from the vaccination?
A Yes.

F Q Presumably that was done – I say "academic" in the sense that it was not academic in 2002 when Dr Donegan wrote her report?
A It was something that was relevant in 2002 but not to the two children.

Q Obviously someone considered that thiomersal should be removed from the vaccination for whatever reason?
G A That is true, yes.

Q Also whilst we are on the sort of clear-up points, I think you have produced a paper of the twins that you said was a double-blind placebo?
A Yes.

Q Can I ask you about that before I go on to the second report. I cannot remember
H whether a copy was produced for the Panel?

A Copies were made, I am not sure if they were distributed.

THE CHAIRMAN: We have not seen it. This is the Finnish study.

MR STERN: That is exactly right.

THE WITNESS: In a sense I suppose it depends what we are going to talk about as to…

B

MR STERN: Again it is going to be rather brief, I hope. (*Same handed*)

THE CHAIRMAN: That is D16.

MR STERN: (*To the witness*) This is a study, which is reported in 2000 in this journal as we can see?

C

A Yes.

Q But in fact it was a trial, if we look at the bottom right-hand corner, that took place in 1982 and 1983?

A Yes. It was initially reported in 1986.

Q In the *Lancet*?

D

A But at the time I cannot download 1986.

Q Do not worry. So we have the time line in relation to it, as you say, the figures were reported in the 1986 *Lancet*?

A The first part of the studies.

Q I think that there is a hint of that, if you look at the right-hand side second paragraph down it says:

E

> "We performed a randomised double-blind, placebo-controlled and crossover vaccination trial in twins using the MMR vaccine in widest use internationally; the early results were published shortly after the trial",

F

that is the reference, I think, there?

A That is right, yes.

Q Then the trial is set out at the bottom right-hand corner. I think that the conclusion is as you have, I think, already indicated. If we look at the "Twin study set up" in the right-hand corner, "The trial participants were recruited between November 1, 1982 and October 31, 1983". Then moving to the second paragraph from the bottom right-hand side we can see

G

> "Parents of 581 twin pairs 14 months through 6 years of age consented to and completed the study. In each pair one child was randomly allocated a green and the other an orange colour code, with all materials coloured-marked accordingly. Each twin pair's vaccination pack contained two doses of vaccine and two of placebo.

H

A

> Hence each child received one dose of vaccine followed by one of placebo – or vice versa –three weeks apart".

Then over the page in "Statistical methods":

> "The results confirmed that postvaccination days 6 to 14 formed the primary risk period",

B

just so we have that picture. Then on page three, in the left-hand side, the final sentence:

> "Overall 6% of vaccines had events attributable to MMR vaccination.
>
> Respiratory systems and signs behaved in an entirely different manner. Their frequency increased by 15% to 20% during the first 10 days postinjection and did not subsequently decline. Surprisingly, this occurred identically in vaccinees and placebo recipients".

C

That is the point, I think, that you were making about it?

A There is a background rate to these things.

D

Q So there were a number of symptoms that the vaccines sustained?

A Yes.

Q And there were a number of symptoms that those who had the placebos sustained?

A That is true, yes.

E

Q What this paper does not say is what was contained in the placebo, does it?

A I think it does.

Q Does it? Well it does in the 1986 *Lancet*, even if it does not there?

A Yes. One or the other.

F

Q I do not think it does in that paper; I may have missed it…

A You are probably right.

Q Let me read you a bit from the *Lancet*. It says:

> "The injections consisted of 0.5mml of vaccine or placebo (the same product including neomycin and phenol red indicator but without the viral antigens".

G

A Yes.

Q Would you agree or do you want to look at the *Lancet*?

A No. That is my memory.

H

Q That is your memory right. That is the only point about that so I need not copy it for everyone. The placebo contained neomycin?
A Yes.

MR STERN: Can I give you a copy of the *BNF* in relation to 2001? (*Same handed*)

THE CHAIRMAN: That becomes D17.

MR STERN: This is 2001 *BNF*; anyone who wants to look at the original *BNF*, it is here if anyone wants to see it. "Aminoglycosides" is the subheading. If you turn to the next page (page 270), "Neomycin is too toxic for parenteral administration", that is to say cannot be given by mouth…
A No. Cannot be given by injection.

Q I beg your pardon. "And can only be used for infections of the skin or mucus membranes", *et cetera*. That in fact was the placebo?
A Yes. Do you want an elaborate answer on it?

Q You must give any answer you wish?
A Well a placebo is something that is considered pharmacologically inactive or unlikely to be so, as far as you can tell. Therefore, it is not only important what is in it, but the quantity that is in it and what the statement here is saying is that if you gave enough neomycin by injection to kill the germ you were trying to kill, it would be too toxic so you cannot do that.

Q Right?
A But it does not mean to say that in the amount that is in the vaccine it would be toxic and produce the side effects they talked about – actually I am not sure… In that paragraph they do not talk about what side effects, but the side effects any way. I mean there is one concern you might have about the small quantity of neomycin and that is an allergic reaction.

Q That is a point in relation to that, if I may say so, so I can move on…
A There were two other things. There was the Sheehan paper that you asked me to look at, that was the one from Africa about cell-mediated immunity. Do you want me to…

Q If this…
A I mean I have nothing to say unless you did.

Q No, I do not.
A The other thing was that you tabled something about hepatitis B vaccine and demyelinating – remember this was a download from the web.

Q Is this the French ---
A Yes.

Q I am not sure whether Mr Kark has come to a view as to whether or not… The Panel have not got that at the moment.

A Okay.

Q Shall we move on? It may be that when Mr Kark has indicated one way or the other, we can deal with it. I do not want to deal with it in the absence of the Panel seeing it. Can we move to the second report? I am sure you will be pleased to learn that I can deal with this relatively shortly. Just before I do, there is one other general matter that I would like to ask you about. I want to ask you about the contact that you have had with lawyers. What I do not want to know is about conversations that you have had and the nature of those conversations. Do you follow what I mean?

A Yes.

Q It is just the actual contact that you have had with lawyers as an expert in this case. You can obviously enlarge on that, if you want to. As I understand it, you had a conference with counsel previously instructed in this case some time in May 2006. The dates do not matter.

A Yes.

Q That was before your report?

A Yes.

Q It may be that you have done a preliminary report; I know not?

A I am afraid without referring back… I mean I might have made some point, but I do not think I did a report.

Q You then had a conference with counsel. Do I take it that in the intervening period between now(*sic*) and today, or since you started your evidence, you have had at least one conference with counsel?

A Sorry, between my starting to give evidence and…?

Q Between May 2006 and the start of you giving evidence – if I expressed that badly, I apologise – you have had conferences with counsel?

A Yes, that is true.

Q Approximately how many?

A Either two or three.

Q Again it does not matter. During the course of that conference – again I do not want the comments that have been made by counsel or anyone else – you have been through your report, I presume?

A Yes.

Q That makes sense. Do I take it that there has also been correspondence in relation to this matter between you and your instructing solicitors? Again I am not asking you for the content.

A Yes.

Q No doubt also emails and other telephone communications that there usually are between experts and their solicitors?

A That is true, yes.

Q That is all I want to ask you about that. The second report, please, page 46 of your report, page 75 of Dr Donegan's report. It goes right over to page 48 of your report because the comment that you make in relation to her at paragraphs 1.3 and 1.4 is essentially that the tone ---

A I am sorry, this is my comment on Dr Donegan's second report, is it?

Q That is exactly right.

A My pagination begins at 47, not 46.

MR KARK: I suspect that the answer to this is that Mr Stern is using an original, unsigned copy that he was served, not the signed one that he should have received about three days later.

MR STERN: That may be so.

THE CHAIRMAN: But your list is correct, your index for us is correct – 47.

MR STERN: Good. Thank you, Mr Elliman, thank you, Mr Kark.

Q Can I go on to what I am calling page 48 – and I am sorry if it is not yours ---

THE CHAIRMAN: Page 47.

MR STERN: Page 47, where it says "The tone of the paper is very much in favour of immunisation"?

A Right.

Q That is your comment in relation to those two paragraphs?

A Yes.

Q That is obviously an opinion and we may hear evidence about that. I need not trouble you about. Can we go through, please – and, I am sorry, this is going to happen again and again, so I do apologise – can we go to… Well, what I will do is give you the page number that you deal with, so it will be pages 76 and 77 of Dr Donegan's report, dealing with paragraph C1.10. You set out an (a) and a (b) point, which corresponds with her (a) and (b)?

A Yes.

Q On page 77, 1.5, C1.10… No, I do not think I need ask you about that either. Your next point begins, "Dr Donegan claims that 'Measles, mumps and rubella have not virtually disappeared from countries with high MMR vaccine uptake'."?

A It is the top of page 50.

Q Thank you very much. You then set out:

> "In Finland, where they have administered two doses of MMR to children since 1982, they have eliminated measles, mumps and rubella … There have been no cases of congenital rubella in Finland since 1987 and, although cases of the three diseases have been

> imported, they have not spread within the indigenous population. In Sweden, writing in 1997, Bottiger and Forsgren stated that there had been no cases of congenital rubella syndrome since 1985."

So, you say that her claims on this point are inaccurate?
A Yes.

Q I am not quite sure which particular point it is that you are saying is inaccurate?
A This relates to paragraph (b) on page 77 – "Mumps, measles and rubella have not virtually disappeared from countries with high MMR vaccine uptake". I would have to go back to the data to be absolutely certain, but certainly in the top three or four countries would be Sweden and Finland, where they have virtually eliminated those diseases, which is what I was referring to. The USA did not give up its efforts in 1968. Those were the main points.

Q The USA gave up its efforts to eradicate just measles in 1968?
A Yes, or at least I assume so. Yes, it is. That is stated specifically, measles in 1968.

Q Did it not cease giving a vaccination for measles at some point?
A It changed from measles to measles, mumps and rubella, so it did not stop giving measles. It gave other things as well. In fact, in terms of changes, they introduced the MMR before we did; they introduced the second dose of MMR before we did.

Q I think what she does there is sets out just several examples of various countries?
A Yes.

Q I think you quote from your reference DE43, which we can perhaps look at, please. Just looking at the abstract on the left-hand side, the final paragraph:

> "Despite these challenges, a compelling case could be made in favour of measles eradication, and the authors believe that it is in our time. The question is when."

That is the part that you quoted from you in your report?
A Yes.

Q It is the abstract. Just looking at the main report and "The Role of Humans":

> "Humans are the only reservoir for measles virus and virus survival in the environment is limited to several hours. Measles is an acute disease with a period of infectiousness generally of one week or less. (Chronic infection with defective virions occurs rarely and manifests as subacute sclerosing panencephalitis)."

It then goes on:

> "Because the infection period is short…" ---

THE CHAIRMAN: We want to clarify something.

MR BROWN: Can I just clarify a point about dates, please? I think Dr Donegan's report says that the USA gave up its efforts to eradicate measles in 1968, five years after the vaccine was introduced. I think Dr Elliman indicated that MMR was introduced virtually simultaneously. Is that right?

THE WITNESS: No. The MMR was introduced in the States in something like 1971/72.

MR BROWN: Yes, that is what your report says. So there was a hiatus?

THE WITNESS: No. What I am saying is that they never gave up using measles, so they used the measles vaccine and then went straight over in 71/72 to MMR.

MR BROWN: So it is the 1968 date that is wrong, is it?

THE WITNESS: No. Well, it did not give up its efforts – or I claim it did not give up its efforts – to eradicate measles in any year. I am not sure where 1968 came from.

MR BROWN: Thank you.

THE CHAIRMAN: We will hear about that.

MR STERN: The bottom of the left-hand column:

> "Because the infectious period is short and measles is highly contagious, a large and continuously replenished supply of persons susceptible to measles is necessary to maintain transmission. It has been estimated that sustained transmission of measles requires that a threshold population of several hundred thousand."

Please can we go to 1523, in the bottom right-hand corner, "Transmission Among Adults"?

> "As vaccination programs reduce the risk of measles, susceptibility to measles can increase among adults for three reasons: (1) some adults have never been exposed to measles and have never been vaccinated; (2) some were vaccinated but did not respond … and (3) vaccine-induced immunity may wane."

A Can I help? I think I know where you are going and I might agree with it.

Q Yes.

A On the one hand, he is saying that we could continue our eradication efforts. He is saying that it is difficult, and in fact you could argue that he is over-egging his case to some extent because you do not need, I would agree, quite so many people to be susceptible for the disease to persist, because it is a highly infectious disease; and certainly in this country we would be worried long before we had hundreds of thousands of susceptible people. My argument was not with the logic of arriving at the conclusion

about eradication but the statement that the US had given up its attempts.

Q Just pause a moment. I am being spoken to. (*Short pause*) In relation to this second report, there are references that Dr Donegan has given in this report?
A Yes.

Q Have you ever looked at those?
A Yes.

Q They have never been copied and they have not been copied for the Panel.

MR KARK: When Mr Stern says that they have never been copied ---

MR STERN: They have never been copied for the Panel.

MR KARK: No, not for the Panel but you have obviously had them.

MR STERN: Yes.

THE WITNESS: I did think that I had them but, if you say not, then ---

MR STERN: I am not saying that you have not had them. I do not know whether you have had them. All I am saying is that they have not been copied for the Panel, and I was wondering whether you have actually seen them.
A I thought I had seen the references that were referred to, numbered in her report, but now that you ask, I could not put my hand on my heart and say that I had.

Q Because you will see that in the middle of page 77 in the (b) paragraph, halfway down there is a reference to Orenstein WA *et al*, "Worldwide Measles Prevention"?
A Yes.

Q Obviously, you are not sure whether you have seen the paper or not, but if I just read you one bit from it, it says:

> "The eradication effort ended after 1968 when federal resources were diverted to rubella control."

A I would like any paper and not want to comment on a line taken out of it.

Q Of course not. That is why I asked you first of all whether or not you have seen these.
A It is the sort of paper that I probably have read, but I could not say whether it was in this context or another context. Of course, when they say "The eradication effort has ended", one would need to see the paper.

Q I appreciate that.
A Did that mean that actually they felt that they had done quite well and could now transfer resources somewhere else, or did it mean that they had held up their hands and said, "We are getting nowhere"? They are quite different things.

MR KARK: Could I just make a point on those other references? Some time ago I spoke to Mr Stern, I thought, about this. We decided not to copy another two bundles of reference material.

MR STERN: One bundle.

MR KARK: I thought it was two, because we thought quite frankly that the references were getting out of hand. I thought that Mr Stern and I had talked about this when we agreed that the Conway and Kroll reports should go before you but not their references. If there is a pressing need ---

MR STERN: We did speak about that. That is their references. These are Dr Donegan's references from her second report. We are talking about something completely different here. I would be grateful to know, and I am sure that Dr Elliman will be grateful to know, whether or not he has looked at those, if Mr Kark is able to help with that.

MR KARK: So far as this reference is concerned that we are looking at here, the Orenstein, for instance, is Mr Stern saying that that is in a completely separate bundle of Dr Donegan?

MR STERN: Yes, this is an entirely separate bundle of references for the second report. If you look through, there are a series of other papers referred to.

MR KARK: We will have it here, but I am afraid it is going to be in the boxes behind me, and I am afraid I cannot recall whether or not Mr Elliman was sent them. I rather presumed that he had been.

MR STERN: All right.

THE WITNESS: From memory, I received – and this is memory – what are in the bundles, so if it is not in this set of bundles, then I probably did not receive it.

MR STERN: Can we move on then?

THE CHAIRMAN: Just to take up the point that Mr Brown brought up, where does this leave Dr Donegan's statement in (b)? Is this accepted as ---

MR STERN: I think that Dr Elliman will have to look at this report.

THE WITNESS: I am happy to look at it over coffee or lunch.

THE CHAIRMAN: This is quite an important point.

MR STERN: Can we look at your reference 37, please? This deals with the Finland study that you have referred to in your report at page 50. Do you have that?
A I do, yes.

Q

A

> "In Finland, the national 2-dose MMR vaccination programme for children, free of charge and on a voluntary basis, was launched in 1982. Serological confirmation of all suspected cases of mumps and rubella has been required since 1987. Despite intensive surveillance no persistent sequelae or deaths attributed to vaccination has been detected. Indigenous mumps and rubella were eliminated in 1996 but 4 imported cases of mumps and 2 of rubella occurred from 1997 to 1999. Lack of secondary sufficient immunity in the community.
>
> …
>
> Finland is the first country free of indigenous mumps and rubella (measles was eliminated in 1996). Despite the ongoing possibility of imported disease major outbreaks probably can be avoided by maintaining high vaccination policy and 2-dose coverage policy."

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That is their opinion in relation to that. Then if we turn, please, to the comment on page 2646 in the bottom left-hand corner, it is the penultimate page actually of the report, it is under the sub heading "Comment" on the left-hand side, second paragraph.

D

> "Despite the indisputable benefits there is concern that waning vaccine induced immunity would put the population at risk for a resurgence of the disease. A mathematical model of protection induced by an immunisation programme using a single rubella vaccine dose suggested that assuming 80% of 2 year old children would be vaccinated 90% of vaccines would develop protective antibodies and 1% per year would lose immunity. Record low levels of congenital rubella syndrome would be reached within 20 to 25 years."

E

Then the last paragraph on that page:

> "Fortunately two factors are in our favour. First, no mathematical model truly depicts the actual situation since underlying assumptions are not necessarily fulfilled",.

F

and then second and more importantly:

> Finland relies on 2 vaccine dose strategy. Our long-term follow up studies indicate that antibodies decline over years despite 2 vaccine doses but we cannot interpret as yet the clinical relevance of this finding. We do not know at which point the danger, if there is a danger, of a substantial epidemic becomes real. We think that waning vaccine induced immunity is a genuine phenomenon especially in circumstances where natural boosters are totally lacking as now in Finland. One dose of MMR vaccine, even when successful for all components, does not necessarily induce lifelong immunity unless reinforced by sub-clinical infection, natural

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> boosters or vaccination. The best we can do is to give 2 doses in the hope they will serve better than one doss. At least for measles this approach seems well justified."

So it is not quite as optimistic in the Finland report. Do you agree?
A Yes. I do agree. I was taking issue with a statement that it had not been virtually eliminated and there is no question it has been eliminated from Sweden and Finland. You are right to flag up issues as to how long that will last for and, of course, in this country we do have doses of MMR as they do in Finland so we cannot tell what will happen in 10 or 20 years but as it is in Finland the diseases have, as we have seen, been eliminated.

B

Q Do you think it is a little short-sighted just to say this is the position today?
A I was not giving a large dissertation. I was responding to the points that Dr Donegan had made and one of them was the statement that they have not virtually disappeared from countries with high MMR vaccine uptake to which my response was using the examples---

C

Q Of Sweden and Finland it has?
A Yes, where they have the highest uptakes.

Q The other paper you refer to is DE44. Perhaps we can look at that. This is "Twenty years' experience of rubella vaccination in Sweden." Looking at the abstract on the first page, last line.

D

> "Since 1985 no child with rubella syndrome has been registered."?

A Yes.

Q Can we go to page 1540 in the bottom left-hand corner, half way down you will see "Effect on the incidence of rubella in the population." Then half way down that paragraph, five words in it says:

E

> "The last moderate epidemic of rubella appeared in 1985. After this time no more incidence peaks have been seen in any age group, only sporadic cases have been reported. The reports from districts, offices, schools and laboratories all show the same trends."

F

If you look at the foot of the page, so we make this clear, the last three lines:

> "During the last five years only single cases have been reported. Among women of child bearing age these were two cases in 1992, one in 1995. Three women were unvaccinated. In two of the cases the rubella infection was acquired from abroad by the patient herself via her husband. In the third case no apparent source of infection could be traced."

G

So I think it is not quite right that, as you put in your report, that there have been no cases of the syndrome since 1985?
A These are infections, I think, rather than congenital rubella syndrome. I need to

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A read the totality but I think that it is what it is saying. It says "…only single cases among women of child bearing age…" they would not bother to state that if you were talking about congenital rubella because it can only appear in child bearing age but it is the group you would be worried about being infected. As I say, I have to read the whole thing again but I think that is the message; it is infections, not congenital rubella syndrome.

B Q If we look over the page, "Rubella in pregnant women", the last sentence of the first paragraph:

> "The number of cases gradually decreased … only one single case of rubella been reported. The children born were also followed to assess the rate of rubella related defects. The results of this investigation are given in table 2. Rubella during the 16 first weeks of pregnancy resulted in damage of 23 of 52 children."?

C A Yes, I think that is right. If one refers to table 2, which is rubella in pregnant women, the fifth column is damaged children and we can also take legal abortion, spontaneous abortion. There have been no cases in any of those categories since, well, the last was a legal abortion or two in 1986. So that would mean there are no damaged children which would be congenital rubella syndrome from 1984 was the last group.

D Q So what does that mean?

> "Rubella during the 16 first weeks of pregnancy resulted in damage in 23 of 52 children"?

A Can you show me that again?

E Q Page 1541, left-hand side: "Rubella in pregnant women", it is the second paragraph just before you hit the bar charts?
A Yes,

> "The results of this investigation are given in table 2. Rubella during the 16 first weeks of pregnancy resulted in damage of 23 of 52 children."

F Then if we go over the page, table 2, the fifth column lists damaged children. That column, there are no entries in it after 1984. So there are no reported cases of congenital rubella syndrome from 1984.

G Q Right. I am sorry it is me being slow but what does that mean: "…damage in 23 of 52"? What damage are we talking about?
A If we take the whole table it begins in 1978, there are 23 between 1978 and 1984 children that were damaged. I assume they are meaning damaged in relation to rubella.

Q I see, right. Thank you. Just over the page at 1543 if we can, please, three quarters of the way down on the left-hand side about ten lines up begins:

H > "The duration of vaccine induced immunity is a matter of concern.

> Long-term follow up studies in the UK, US and Sweden have shown that immunity to rubella after vaccination is lower than after natural infection and that it declines with time. In the Swedish project study 6% had lost detectable antibody activity 16 years after vaccination."

THE CHAIRMAN: You said 60 it should be 6. It sounded like 60 to us.

MR STERN: Did I say 60? I do apologise. I am sorry.
A I think there is no question that the policy will have to be reviewed, monitored as time goes on.

Q Yes. I am not going to trouble with the next point because it is you saying Dr Donegan quotes it correct both articles pointed out the value of immunisation preventing diphtheria?
A Yes.

Q The next point is my page 50 of your report but it is under the heading page 82, 1.15?
A That will be page 51 then.

Q Page 82, 1.15. Dr Donegan is responding there to, as she is in all of the report, to Dr Conway. Dr Conway states:

> "It is unlikely in his opinion that a whooping cough outbreak would start and spread amongst such a well vaccinated population. An article in the BMJ…",

then it is quoted there and that is really the end of that paragraph. Your comment is:

> "The paper by Van Buynder et al (tab 23) describes a system of enhanced surveillance for pertussis deaths over a short period. The authors found more cases than had been reported by any single standard system. Therefore, their figures cannot be compared with a routinely collected ones. Dr Donegan's statement that we would be better off with lower uptake of the vaccine is therefore based on a wrong premise."

Where is that in 1.15, her statement that we would be better off with a lower uptake of the vaccine?
A I cannot see it.

Q I could not either. That is why I thought I would ask. Can we move on to the next one.
A It has obviously got out of place because it is not relevant to that paper either.

Q No. I cannot see the comment but---
A The paper I quote really does not relate, I am afraid.

Q Can we move over to the next page which is Dr Donegan's report page 83, paragraph 1.17 and your comment about this is the use of Professor Stewart's research and your comment which is under the heading: "page 83, 1.17":

> "While Dr Donegan uses Professor Stewart's paper from The Lancet 1977, she fails to make use of the paper by Malleson and Bennett"?

A Yes.

Q Did Dr Conway or Professor Kroll refer to that paper?
A I honestly cannot remember.

Q Dr Conway, as we can see from the top of page 83 of Dr Donegan's report, dismisses the paper because of its age?
A That is Professor Stewart's paper.

Q That is right, sorry, yes, and what Dr Donegan is doing in this paragraph is, as it were, bolstering Professor Stewart's paper?
A She is saying that just because of its age you should not dismiss it, which is something I would agree with. You should look at the merits of the paper rather than its age.

Q You deal with this, DE46, that paper, we better look at that briefly, if we may. This is the Malleson paper. I think we can look at the summary which is:

> "188 children with pertussis were admitted to Derbyshire Children's Hospital over a period of ten years. Fewer immunised children were admitted than would be expected if immunisation were ineffective. Immunisation seemed to decrease the risk of complications."

Under the introduction:

> "The value of pertussis immunisation has been questioned continually over recent years either on the grounds of inefficiency or because of the risk of severe complications.
>
> …
>
> We therefore decided to look retrospectively at the admissions to Derbyshire Children's Hospital of all children diagnosed with whooping cough over ten years from January 1964 to June 74."

What is significant about this particular paper?
A I am not sure if it existed then but The Lancet now certainly has a policy of often publishing papers, as I am sure you are aware, that are somewhat controversial and then they will usually publish at the same time a paper that perhaps balances that. These two in effect do that. One by Professor Stewart suggesting that the vaccine is not very effective. The other, which is on the exactly same page as Professor Stewart's, is actually suggesting that the vaccine is effective. Therefore, to put a balanced picture one would

need to refer to both. One might end up dismissing both, in fact, but one should refer to the balance is what I was suggesting.

Q At the bottom of your report, page 83, 1.17 and 1.18 you deal with Professor Stewart's views. You say they are not those of most of the experts in the field:

> "In giving evidence in a court case he agreed that he was in a minority of his peers. He also agreed that he had made mistakes in the report that he had given to the court in an article he had written and in a report to the DHSS. This does not mean that one should ignore all he says, but that one should look for more corroboration of his views than one might for others."

Do you not think that is a little gratuitous in relation to Professor Stewart?
A I think it is a statement of fact and, as I say, a court criticised him roundly because of mistakes in his calculations in a number of aspects of what he had presented to a court and he is in a minority amongst experts. I think there is no debate around that and, as I said, that does not mean to say you should ignore all he says but you must bear that in mind when deciding what weight to attach to it.

Q Paper 47, you reference to divider 47 and 48 of your---
A Yes.

Q Look at those. You have done that in order to, as it were, undermine Professor Stewart a little bit. It is an article by a legal correspondent. It is your reference 47. Yes?
A Yes.

Q On the right under the sub-heading "Professor Stewart's evidence", this is, of course, just a journalist's view, is it not?
A I am not sure what qualifications this particular person had.

Q It says "by legal correspondent"?
A Yes.

Q It says:

> "Most of the first few weeks had been taken up with the evidence of Professor Gordon Stewart, the first of what promises to be a parade of experts and a leading figure in the pertussis vaccine controversy. Opening the case for [the individual] the Council took Professor Stewart, now temporary consultant to the World Health Organisation, through the background to whooping cough…",

is she still with the World Heath Organisation?
A I honestly do not know.

Q He is retired now?
A He could still be emeritus. People still get called on when they are retired.

A Q

> "Through the background to whooping cough vaccination and the literature adverse reactions. Professor Stewart said that the vaccine in current use was prepared from whole cells, growing the organisms of whooping cough in a suitable bacteriological medium and then taking entire suspension of living bacteria, killing them, adjusting to a certain density and injecting the whole preparation into children.
>
> Early reports of adverse events went back to 1933 when Madsen reported two 2 sudden deaths in Denmark, and the sudden deaths of identical twins from delayed anaphylactic shock were reported in the US in 1946.
>
> …
>
> Strom published the results of his investigation into vaccine reactions in Sweden in the *BMJ* in 1960. In 215,000 vaccinated children there were four deaths and nine children showing cerebral sequalae. The Swedish Royal Medical Board appointed a special committee to examine Strom's case, which were drawn from a questionnaire sent to hospital departments and child welfare centres covering the period 1955-58. The committee concluded that proved incidence of brain damage was 1 in 50,000. In the later study of children born between 1962 and 1964, Strom estimate the incidence of gross destructive encephalopathy as 1 in 170,000, and brain damage less than destructive as 1 in 34,000. Sweden discontinued the vaccine in 1978".

Professor Stewart said that, no matter how scrupulously the vaccine was prepared one could not avoid including toxic products".

That was point that he was making, is that right?
A He is recounting the history and making that point, yes.

Q Then at the foot of the page:

> "Dr Griffith, formerly of the Wellcome Foundation, wrote in the *BMJ* in 1978 that out of 15 million doses pertussis distributed in the UK from 19640-67, and only six deaths, six neurological reactions and 17 convulsions have been reported".

Going to the right-hand side of page 1265:

> "Mr Machin drew Professor Stewart's attention to a statement in his report in the DHSS in October 1983, "But the encephalopathy study is by its design restricted to children aged two to 36 months admitted to hospital and still in hospital 15 days later. Professor Stewart said that he had made a mistake and it should be corrected. A letter

published in the *American Journal of Epidemiology* in 1984 in which he had made the same criticism had been written some time before even his report".

That was it, was it?
A No. The third paragraph:

> "He also agreed that he had criticised the protocol for being restricted to children who had convulsions lasting half an hour. It was pointed out to him that total duration of half an hour of a convulsion of whatever length followed",

et cetera. So,

> "Professor Stewart agreed that his bald statement was incorrect and needed qualification. He also conceded that he had said in a deposition that controls used in a study where children admitted to hospital with other illnesses when in fact they were community controls".

So is that set of things.

Q I think then we can see:

> "He said he did not know how he had come to make such an error. He was asked by Mr Machin if it was possible that he was so obsessed with the idea that pertussis vaccine was dangerous that his enthusiasm had run away with him. He replied that he tried not to and he did not think he had".

Does that conclude it or?
A I think that concludes it. Then there is the heading about agreeing in the minority.

Q You thought that was necessary to include in relation to this case?
A I think if one is relying on something that was written by someone who has been criticised and who admits he was in a minority, then it helps the background. Just as if – well, if I had not said that I had received money from vaccine manufacturers in the past, I think that would have been an omission on my part.

Q Can we look, please, at the part of your report that deals with page 87 1.26 of Dr Donegan's report, so it is page 87 of Dr Donegan's report. 1.26. Dr Donegan is there referring back to Dr Conway's report and refers to a paper from Wentz *et al* in 1991.

> "The 'controls' in these studies are not unvaccinated, they have been given tetanus, diphtheria and polio vaccinations. These vaccines are associated with numerous adverse reactions and may indeed be the cause of idiopathic childhood neurological illnesses themselves".

You say that she:

A

> "gives no evidence in relation to that. Even though she uses the term 'may' this could be misleading",

that is your point?
A Yes.

B Q I think this comes back to the point that we were talking about before about the merit of studies in relation to vaccinations where individuals have been given a part of the vaccination or some other vaccination. If the controls had no vaccines and the cases had a vaccine then… Well I think we have already dealt with this point; I do not see any point in going through it again.

I think you accept that there is a temporal association between the vaccine and numerous
C adverse reactions, do you not?
A Yes. At the age that we give vaccines in this country and many countries there is a temporal association with a number of events.

Q The next point at the foot of the page, which refers the page 90 of Dr Donegan's report paragraph 133. Looking at page 90 we can see Dr Donegan quotes the Pollack/Morris study 1983, "It should be noted that … were all included in the evidence
D reviewed by Howson *et al*", and there is a discussion of that there. Your criticism is that the summary of the paper of Pollack and Morris (which is D51), "No convincing evidence", *et cetera*.

> "This is important as it implies that if there is a link it is rare. By omitting this,
> Dr Donegan may mislead her readers".

E Can we look at DE51, please, because this is the paper? On the left-hand side you can see the summary and in the final line, which is the part that you have quoted from:

> "No convincing evidence that DTP caused major neurological damage emerged from this larger and lengthy study",

F yes?
A That is right, yes.

Q The effect of that has been missed from Dr Donegan's report, you say?
A Yes.

G Q Looking, please, at page 756 in the report, under the discussion section:

> "Voluntary reports of neurological disorders were more frequent in children vaccinated with DTP than in those vaccinated with DT. However, this difference was not found when admissions to hospital for these conditions in recently immunised children were examined. The neurological disorders reported in the voluntary system as
H reactions to DTP were too widely divergent to suggest a common

A

> aetiological agent. Taken individually, since such disorders are known to occur in unvaccinated children, none could with any confidence be attributed to the vaccine".

That is really the same point, is it not?
A Yes.

B

Q "The eventual decision is a matter of individual opinion and it is open to prejudice". If you look, please, over the page at Dr Donegan's report at page 91, half-way down that paragraph you will see:

> "However the conclusion was that, "*The neurological disorders reported in the voluntary system as reactions to DTP were too widely divergent to suggest a common aetiological agent. Taken individually, since such disorders are known to occur in unvaccinated children ... none could be attributed to the vaccine*".

C

Is that not…
A It does not go on to give the more powerful bit, which is what Dr Donegan mentions later, which is the HAA. I think that the conclusion from that, that just saying it was small and the findings should be retested is somewhat selective because actually they are saying that it is unlikely that there is any link. If you remember, the paper does a discussion about the fact that the voluntary reports are likely to be unreliable, which Dr Donegan covers...

D

Q Sorry, which is the HAA study?
A Sorry. There were two ways that they looked at this: one was voluntary reporting; the other was linking hospital activity analysis, so looking at children who had been admitted to hospital and linking it with their vaccine status, which is the more reliable of the two because it is not asking someone to say whether there was a link, whereas when you ask someone to report an adverse event after a vaccine they have got to make a link. When you look at children who are admitted to hospital, you then look at their vaccine records so you are not prejudicing, one way or another, whether they might be reported and that is the stronger part of the study.

E

F

Q I am looking at your report. Your report says, "*There is no convincing evidence that DTP caused major neurological damage emerged from this large and lengthy study*", yes?
A Yes.

Q

G

> "The itself ends, '*We cannot rule out the possibility that some vaccines may on rare occasions cause brain damage, but no convincing evidence of this has appeared during our study*"'.

The point I am putting to you is that she has put, at page 91 of her report, the conclusion. Your criticism is that she has not included the conclusion and I am suggesting to you that she has?

H

A Well, what I am saying is that if you read the comments on the HAA study it suggests that the present study was small and the findings should be redone. What I am saying is that it should have been followed up with what they said, which was that if there was a risk it would have to be small.

Q But if you look just above she said,

> "The neurological disorders reported to the voluntary system as reactions to DTP were two widely divergent to suggest a he common aetiological agent"?

A Yes.

Q

> "Taken individually, since such disorders are known to occur in unvaccinated children, none could with any confidence be attributed to the vaccine"?

A Yes.

Q Well, is that not sufficiently representative of this paper?
A There are two studies within this paper. There is one that you have just gone through and then there is the more powerful – because it did not rely on someone having to say there was a link or not, which was the HAA study, which is the one that Dr Donegan then refers to a the end of that paragraph, saying they should go on and do a larger investigation. If you read the abstract the authors are quite clear that said,

> "No convincing evidence that DTP caused major neurological damage emerged in this large and lengthy study".

The business about only 682 children is – that is quite a large study because this is not 682 children in the population, but 682 children who were admitted to hospital so that is quite a large study. If you remember the study we talked about (the MCES) was only just over 1,000.

Q Can we move on to the next point, please, which is under page 94 paragraph 1.41 of Dr Donegan's second report? Looking at paragraph 1.41 of her report at page 94 Dr Donegan is responding to Dr Conway in relation to the Danish study by Shields *et al* and dealing with changing timing with the pertussis vaccine whose potency was reduced by 20 per cent and the aluminium adjuvant was removed.

> "Certainly the graphs at figure 2 show the percentage of onset of epilepsy as being highest at the major times of vaccine administration – one to eight months – lowest level at 12 to 14 months and then rising again to a smaller peak of 15 to 19 months. The graphs in figure 3 show 804 with a percentage of cases of CNS infections, bacterial meningitis, aseptic meningitis shows a similar pattern factor but, unlike the epilepsy graph, there is a flattening that

A

> occurred in the later group possibly reflecting the wider group of vaccination ages (six separate vaccinations episodes in the later compared to four in the early study) and the changed age of pertussis administration making more of a difference in the epilepsy graph. An increase in referrals for febrile seizures was thought to reflect a real increase rather than a change in the referral patterns. However, the increase in CNS infections in the later period was due to be change in referral patterns. This is a surprising explanation given that most children with a CNS infection would automatically be referred for secondary care".

B

Your comment, under this particular paragraph, is:

> "She fails to mention that apart from febrile convulsions there was no statistically significant change in any of the distributions in spite of the change of pertussis vaccination timings".

C

Yes?
A Yes.

Q But does she not go to on say then, looking back at her paragraph if you could please, that the authors then go on to conclude that no association between the occurrence of epilepsy and immunisation was observed and that in the present study 350 children with bacterial meningitis or aseptic mennigo-encephalitis, "it is reassuring to find no association between pertussis immunisation and the occurrence of these neurological illnesses"?

D

A That is what the author said and then Dr Donegan goes on to say, "This is not what might be deduced by looking at the graphs".

E

Q I appreciate that is what she says, but she does actually include the part that you say she does not include?
A Sorry, I have lost where we are in my reports.

Q The second line down. "She fails to mention that apart from febrile convulsions there is no statistically significant change", *et cetera*?

F

A Well, she does not say that apart from febrile convulsions there was no statistically significant change anywhere. She says, "Increase in CNS infection in the later period was thought to be due to a change in referral patterns". If one goes to the graph, which is on page 804…

Q Pause a moment, we have got not the study yet. It is D52?

G

A The graph at the top is the one that relates to percentage CNS infections.

Q Yes?
A If you look at the – probably the best thing as a shorthand is to look at the "P" number and is this a statistically significant change. Traditionally one accepts that anything that is less than .05 as statistically significant, otherwise it is likely to be due to chance. Another way of looking at this is that when you look at the graphs each point has a bar on it and, crudely speaking, if the bars overlap, well that means that you cannot be

H

A confident that that is any change that is genuine; it could be due to chance. If the bars do not overlap that is likely to be a significant effect. So by just describing that there is an increase has not accounted for this important thing that in every scientific paper now you will see, and the majority then, that tries to give some allusion as to, "Do we think this is just a chance occurrence?" because, for example, if we did 20 analyses, we would expect one to be different purely by chance, and one would need to put that in context.

B Q Just looking at that particular page to which you have drawn our attention, we can see that in the months between one and eight months there is a considerable increase, is there not, in CNS?
A Could you direct me to what you are referring to?

Q 804, the graph that you were just telling us about.
A Yes, and there is a significant increase ---

C Q Does it not increase between those in the age range of one to eight months?
A To tell whether these… You mean there is a difference between the two graphs, so, for example…?

Q If you look at the first graph, you will see that that is percentage of immunizations, is it not?
D A Yes.

Q We can see that between one and three months and then four and eight months – I have taken those together – there is a pretty high rate of immunization, is there not?
A Yes.

Q If you then look back at the top graph that you were just drawing the Panel's
E attention to, it deals with the percentage of CNS infections. We can see that there is quite a high rate, is there not?
A Yes, there is, but the whole thrust of this paper was that over the period in question, so that was 1967 to 1973, there was a change in immunization policy, so the immunizations were given at different ages, and for each of the graphs there are two curves plotted, and it is important not to lump the one to three and the four to eight together. They should be counted separately because that is the whole thrust, that the
F immunizations were given at different ages over that first year of life, and what people were looking for was, "When you changed the age of immunization, did you change the pattern of disease?" If your main thrust was that whooping cough vaccine causes these problems, then when you changed you would expect to get less disease in the children who were previously given the immunization at that age and more in the children that were newly given at that age. So, because the immunizations were put off, you would
G expect a higher proportion of the disease in question that you thought was linked to occur at an older age.

If one runs through the graphs, you do not see that effect happening. So, for example, if we take the graph of CNS infections, if whooping cough vaccine was causing them, you might expect that the shape of that graph would be shifted, because you are not immunizing so young, so you get less of those complications in the young age group but
H you get more of them in the older age group. What the authors are saying is that you do

A not get that change. The one that you do get a change in is, if we go to the previous page, in the febrile convulsions, and there you can see nicely illustrated a 'p' value that is less than 0.05; the two bars do not overlap. So there you have a definite change. What is slightly odd is that you do not have a diminution in the earlier age group, which is what you would have expected, because you stopped giving them the immunization then, and one interpretation… Well, no, I will not go on. That is enough, I think.

B Q Shall we just look at this report, as you have given us some detail of it, so that we can try to follow the point? I am going back to the first page, 801. It says:

> "A retrospective epidemiologic study examining the relationship of the time of onset of neurologic disorders with the time of pertussis immunization in two cohorts of children who received pertussis immunization at different ages is reported."

C Just going further down in that particular abstract, about four lines up:

> "There was a statistical association between the first febrile seizures and the scheduled age of administration of pertussis vaccine."

Then on the left-hand side, three lines down:

D

> "There is some agreement that febrile seizures may occur with pertussis immunization, but controversy persists regarding the causative relationship of the vaccine to the occurrence of epilepsy."

A few lines further down:

E

> "The purpose of this investigation was to look for an association between pertussis immunization and the onset of epilepsy, febrile seizures, and infectious neurologic illnesses."

Just while we are on that particular part, we can see that this is supported by a grant from Lederle Laboratories, as I think most of these research papers are?
A They were, and still are, a big vaccine manufacturer.

F Q But a number of the papers are – I will not say "sponsored" because that is not quite the right word – given grants by vaccine manufacturers?
A The overwhelming majority would either be vaccine manufacturers or a lesser number by government departments, whether UK or US.

G Q Just looking at page 802, on the left-hand side, at the bottom of the first paragraph:

> "At the time of the change in the immunization schedule in 1970, the potency of the pertussis vaccine was reduced by 20% and the aluminium adjuvant was removed."

H Going over the page to page 803, under the sub-heading "Epilepsy" three-quarters of the

A way down on the left:

> "There was no relationship between the age of onset of epilepsy and the scheduled age of administration of pertussis vaccine."

In the next paragraph, the final lines:

> "No association between the onset of infantile spasms and the time of pertussis vaccine was found."

B

On the right-hand side, three lines down:

> "There was a statistically significant association between the occurrence of first febrile seizures and the scheduled age of administration of pertussis vaccination … Febrile seizures generally do not begin before 6 months of age and no difference was observed between the 1-3 month and the 4-8 month age groups. However, when the children in the 1972-1973 period received their third pertussis immunization at 10 months, there was a significantly higher percentage of febrile seizures in comparison with the children in the same age group who were in the 1967-1968 cohort. A similar difference was found in the children from the 1967-1968 period, when they received their last DTP immunization at 15 months of age."

C

D

Over the page at 804, which is the one that we were just looking at, just below the graph, we can see this:

> "Thus, at each period after the usual age of onset of febrile seizures, there was a significant increase in the incidence of febrile seizures in the group receiving pertussis immunization."?

E

A That is so, yes.

Q Perhaps we can just look at page 805, please. Halfway down on the left-hand side:

F

> "This study was a population-based retrospective study that did not identify specific individual relationships between pertussis immunization and neurologic illness, so some caution must be exercised in interpreting the results. For example, as noted in the Table, there was a greater rate of hospitalization for febrile convulsions and CNS infections during the second period. For febrile convulsions, this change in rate was due to a countrywide increase in hospital admissions, whereas for CNS infections it was due to a change in referral pattern."

G

At the foot of the page:

> "We conclude that this study showed a temporal association between

H

> pertussis immunization and first febrile seizures but not between pertussis immunization and either the onset of epilepsy or the occurrence of CNS infections."?

A Yes.
Q Can we move on to the next point, which ---

THE CHAIRMAN: Mr Stern, I am looking at the clock. Would this be a good time to take a short break. (*To the witness*) How are you doing?
A I am content, if we only have about half an hour or 40 minutes.

MR STERN: Perhaps we can press on for a little while, unless anybody wants a ---

THE CHAIRMAN: We can press on, if you think that is beneficial.

MR STERN: Page 102 of Dr Donegan's report, under paragraph 1.56. I think I can deal with this rather shortly. Dr Donegan is quoting from part of the paper that she and Dr Conway were discussing. She says:

> "It could be due to the vaccination campaign causing the outbreak. Oral polio vaccine is a combination of live viruses and can certainly be transmitted to other people, who can then become paralysed."

I think your point is that she seems to be implying that there may be an inverse relationship between uptake of the vaccine and cases of polio, hence her statement that the programme may have caused the outbreak. You say that there is no relationship at all, although she is correct in stating that OPD can cause paralytic polio in the context of people who have received the vaccine?
A The statements are correct.

Q You say that it is an implication by omission?
A Well, by taking the highest and the lowest and saying "highest immunization, highest disease, lowest immunization, lowest disease", someone not reading it carefully may think that this is implying that there is a relationship between them, whereas when you go to the figures it is actually all over the place. There is no relationship. There is no trend between increasing uptake of vaccine and increasing disease. As I say, the facts I have no ---

Q This is not somebody not reading; it is a response to Dr Conway, is it not?
A Yes.

Q Let us look at what is referable to page 107 of Dr Donegan's report, paragraph 1.68. There is a discussion between Dr Conway and Dr Donegan about a particular paper and Dr Donegan quotes parts from the paper and your criticism is that she does not mention that they calculate, that is to say in the paper, the efficacy of the vaccine to be 87 per cent. That is really it, is it not?
A Yes. You do not want to pursue this paper because, in fact, I pursued this paper over the weekend – remember it was that complicated paper – and one of the issues was whether you could separate out the children who had been vaccinated and had measles,

A which is a comment that Dr Donegan makes here, which in fact you can, but unless you want to pursue it, I do not.

Q So can we put that to one side?
A Yes.
Q Thank you, that is helpful.
A Mr Kark may want to pursue it.

B Q Yes, that is obviously a matter for him, but he will obviously listen to what you have to say. Page 111 of Dr Donegan's report, paragraph 1.84, is your next comment, and again I can deal with this very shortly because this is another *Pulse* point, is it not?
A I think from memory, is that not the same…? Well, I would have to refer to it, but is this the mutant mumps? I cannot remember.

C Q It has something to do with mumps. I cannot say whether it is mutant mumps.
A I think it was the same *Pulse* article, because it quotes Dr David Baxter.

Q Anyway the point in your report is that it is the *Pulse* article, not primary source, not possible to comment properly?
A Exactly, yes.

D Q We have your point on that I think and there is no point in going over it again. I do not think I need trouble you with the next point because again that is really a matter of comment. Again it is an omission, which obviously ---
A It is quite an important omission, I would claim, as I have put in my report.

Q You have put there that to omit these points is very misleading, and I am not leaving it but that obviously has to be commented on by Dr Donegan. I cannot comment on it.
E A No.

Q The next is at page 113, paragraph 1.87. If I may say so, I am going to put this in the slightly picky column, if I may, with great respect.
A It usually comes before an insult!

F Q No, I am not insulting you at all. In paragraph 1.87 of Dr Donegan's report, at page 113, halfway down, she makes it clear that this is the highest reported incidence?
A Yes.

Q Your comment is that she has included a figure that is an outlier?
A Yes.

G Q But she makes it clear that it is an outlier?
A Yes, but it would have been nice to know the range, to put it in context.

Q Maybe.
A The report was supposed to compare benefits and risks.

H Q There we are. Perhaps we had better just look at the paper. It is DE57. It is not

really a paper. I think it is just ---
A A letter.

Q It says:

> "We are writing to notify health care providers that the risk of allergic reactions to the measles, mumps, rubella (MMR) vaccine may be more common that(*sic*) recognized previously. Epidemiologic data suggest that life-threatening allergic reactions to the single antigen measles or MMR vaccine are extremely rare, less than 71.6 reactions per one million doses."

That is what they are saying. This is all to do with New York, is it not?
A Yes.

Q I do not mean that by way of we should dismiss it because it is New York…
A No, no.

Q …but it has to do with New York.
A And they do add some riders at the end: that they cannot be certain that they were secondary to the MMR vaccine; three of them were only after the MMR vaccine, which implies that in two there was another vaccine; but that was not the point I was making.

Q Page 117 of Dr Donegan's report is your next point, paragraph 1.94. Perhaps we could deal with this point, madam, then have a break, and then I can just see whether I have missed something that I need to come back to, if necessary. Just looking at what Dr Donegan is saying here, please, on page 117, paragraph 1.94, she is dealing with Dr Conway's assertion that the MMR vaccine is safe. She says:

> "This is an opinion. He then quotes two studies to back his opinion. I refer the Court to a review presented to the International Society of Pharmacovigilance in Amsterdam … by Dr Thomas Jefferson."

Dr Thomas Jefferson is well known?
A He is someone who – I cannot remember exactly his background – but currently does work for what is called the Cochrane review, which is a centre that reviews a large number of subjects, and his particular interest is vaccines.

Q She goes on:

> "Dr Jefferson is the author of the largest ever review of MMR safety studies. He found that, 'only 20 of 3,500 studies into the safety of MMR were suitable for inclusion because of poor reporting and bias … studies that fell below the standard for inclusion in the systematic review included the 14-year Finnish study by Peltola et al used as evidence by the Department of Health in its crusade to prove that MMR does not cause autism or bowel disease'."

I am not quite sure where that is a quote from.

A

> "He is reported as saying, 'This is a controversial subject for the Department (of Health) but I'm not out to make friends – I'm out to review the evidence as objectively as possible."

In fact, you have included the abstract from the Cochrane review?
A What happened was that this appeared in *Pulse* in – I cannot remember; where are we? – 2002, and the full paper was not published for some while later and I have included what was in the full paper.

B

Q You have included the abstract of the full paper.
A Have I?

Q Certainly that is what has been copied for us. I have a little more of it that you can look at.
A Yes, sorry, because the whole thing was…

C

Q No, that is all right, the whole thing is voluminous.
A …rather big.

Q What Dr Donegan is essentially saying there is that studies have been the subject of recent criticism, which would have been recent at the time she was writing that report?
A And they are ongoing.

D

Q Yes. The point think she is making is that studies that were claiming safety of the vaccine had been undermined as a result of the Cochrane review? I put it generally but that is essentially it.
A A large number of them that people had relied on were criticised.

E

Q So it did not have anything to do with the MMR scare but more to do with the issue of the reliability of studies?
A It had to do with both but it was specifically around MMR vaccine so it would be difficult not to include the MMR scare within that.

Q I appreciate that but the point really is what she is addressing here in this paragraph---
A Is the principles of the value of the study.

F

Q Exactly, yes. Shall we look at D59. Madam, it might be a good time to have a break because this is point where Dr Elliman has included a couple of pages of the report and we have copied a little more, not very much and it may be helpful if those if those were distributed and we then have copy coffee break and that gives Dr Elliman a moment to have a look at it. I do not think it adds an enormous to that which he has already said but that will help everybody if that is agreeable?

G

THE CHAIRMAN: That is D18.

MR STERN: Thank you. (*Same handed*)

H

THE CHAIRMAN: We will adjourn now for a break and return at half past eleven.

MR STERN: Thank you very much.

(*The Panel adjourned for a short while*)

THE CHAIRMAN: Mr Stern.

MR STERN: Just clear up a few matters if we may, Dr Elliman. Could you urn to appendix 8 in your report. The final page of that appendix you set out a table on the routine immunisation schedule in place in the UK. It says in 2002. I think that must be an error. Is that 2004?

A Yes. I apologise. Yes, it is 2004.

Q It is an error, it is not 2002?

A It is not 2002, no, which is quite an important point.

Q Yes, quite because you put the acellular which was not available in 2002?

A And the inactivated polo was not there either, it was oral polio.

THE CHAIRMAN: Could you repeat that point because I have not got the page?

MR STERN: Page 75. We will have to redo the table. Where it says above the table that the routine immunisation schedule in place in the UK in 2002. Dr Elliman accepts that is an error. It is, in fact, the schedule for 2004 which has been produced there, or post 2004. Not 2002, which is obviously the time that you are concerned with?

A Do you want to spell out the differences?

Q It is in Dr Conway's report. You have it in the schedule already but if you want to hear it again you could certainly do that but there is information that you already have had sets it all out. So I do not want to cut you off but if we already have it there is no point repeating everything. Can I also give you this document, well you better have a look at it first. (*Same handed to witness*) Check that you are happy with it first of all. This is the New Zealand, I cannot read it, the writing is too small. It says at the top New Zealand and Medicines and Medical Services, is it Safety Authority?

A Yes.

Q What I want to draw your attention to was on the second page, definitions of causality. Do you have any difficulty with the Panel seeing this document?

A No.

Q Then perhaps you ought to see it.

THE CHAIRMAN: D19. (*Same handed*) Perhaps we should have done this a little earlier than right at the end but nevertheless I hope it helps at least to give some guidance to people when we have discussed these terms on a number of occasions. I thought that this might give some assistance to the Panel. On the first page it says:

A

> "Clinical judgment is involved in deciding whether or not a medicine is responsible for a particular adverse reaction. Regular reporters to the Centre for Adverse Reactions Monitoring have substantial experience at causality assessment and take a number of factors into account. These factors include the nature of the event, the temporal relationship of the event to the medicine administration, dose relationship, dechallenge or rechallenge effects, possible compounding factors and clinical causability of the event.
>
> …
>
> Temporal relationship.
>
> Timing can substantially strengthen a causal association, as in the case of anaphylaxis occurring immediately after parenteral medicine someone administration. Alternatively the timing of the adverse event may be misleading."

B

C

Then it gives an example. The point that I want to draw to your attention to see if it is something you agree with. Definitions of causality, obviously it is a working definition rather than a conclusive one but to give the Panel some assistance because it is a term of art really, or more a term of science, I suppose?

D

A Well, yes. It should be a term of science to depending upon on how good the evidence is that it is based on.

Q When I say a term of art I mean it has a specific meaning?
A Oh, yes, yes.

E

Q I did not mean it is an art term:

> "At the CARM criteria developed by the WHO are used to define causality. A 'probable' causal association is considered to be one where there is a reasonable time sequence, the event is unlikely to be attributable to concurrent disease or other medicines and a clinically reasonable response follows withdrawal. Rechallenge information is not essential to fulfil the definition. A possible causality assessment also requires a reasonable time sequence but the event may also be explained by and concurrent disease or other medicines and information on withdrawal may be lacking or unclear."

F

G

So does that strike you as a reasonable definition?
A For the purposes of discussion, yes.

Q Can we look at the Cochrane collaboration report?
A Can I say something about this?

A Yes.

H

Q I made an assumption that this is what The Pulse article was based upon because

A I did not know where The Pulse article that quoted Thomas Jefferson had got their information from. Are you with me? The Pulse article was what I think Dr Donegan used as the evidence. We are on my pages 60 and 61, page 116, section 194 of Dr Donegan's report. Page 117, paragraph 194. The Pulse article is October 2002. I do not know if
I have made the right assumption or if Thomas Jefferson was talking about the completed Cochran review because, for example, on page 9 of the Cochrane review itself in the middle there is a paragraph that begins:

B

> "That single case cross over study (Park 2004)"

Q Page 9, did you say?
A Of the Cochrane. The single case cross over study (Park 2004), so that was obviously published after The Pulse article and after Tom Jefferson's presentation. It may well be that he had had access to that when he did his presentation but those are all assumptions, I am afraid.

C

Q Do not worry about that, I really just wanted to look at the point made by Dr Cochrane relation to looking at the research studies, as it were. That is the point I am dealing with. Evidence based research, or not, as it may be. Can we look at page 1 because this is, in fact, in your copy but if you just work from the same copy it will be easier because page numbers alter. You have been given a copy.

D

THE CHAIRMAN: Yes, it is D18.

MR STERN: Thank you. You will find there is a slight difference in the way that it was cut off at the bottom:

E

> "Background
>
> Public debate over the safety of the trivalent measles, mumps and rubella vaccine resulted in a drop in vaccination rates in several countries, persists despite its almost universal use and accepted effectiveness."

F

The objective is to carry out a systematic review to assess the evidence of effectiveness and unintended effects of MMR. So it is to look at the evidence of effectiveness principally that this Cochrane review was---
A Both effectiveness and safety.

Q Looking at the foot of the page we can see authors' conclusions:

G

> "The design and reporting of safety outcomes in MMR vaccine studies both pre and post marketing are largely inadequate."

Then unless there is anything you want to refer to I was going to ask you to look at page 3?
A Can we come back to page 2 then perhaps?

H

A

Q No, if you want to do it let us do as it as we get there?
A Page 2 at the top again gives the background and the last but one, so that is five lines:

> "No credible evidence of an involvement of MMR with either autism or Crohn's disease was found."

B

Q You are missing my point, if I may say so. I am not dealing with the efficacy of MMR, I am dealing with the efficacy of the studies. I am looking at the way in which studies are carried out, research is carried out and whether or not that research is reliable or otherwise?
A Okay.

C

Q That is the point that I am dealing with if I have not made that clear. Page 3, so we can see what it was that Dr Jefferson looked at, half way down:

> "Criteria for considering studies for this review.
>
> Types of studies
>
> We included all comparative prospective or retrospective studies…",

D

then there is appendix in relation to it. They include healthy individuals aged up to 15 years of age. Yes?
A Yes.

Q Then if we can, please, turn on to page 5 on the right hand side: "Description of studies":

E

> "Our searches identified approximately 5,000 articles for screening, a large number of studies because of the deliberately broad search design. Previous search had demonstrated that adverse event data are not in index consistently and up to 25% of studies reporting adverse event data are not identified through standard searching techniques. After screening, 139 studies possibly fulfilling our inclusion criteria were retrieved. The data sets of eight studies which were published several times (redundant publications were only considered once) One hundred and nineteen studies not meeting all criteria were excluded while 31 were included in review. We could find no comparative studies assessing the effectiveness of MMR that fitted our inclusion criteria as all have serological outcomes."

F

G

Do I understand this correctly, that out of 5,000 articles there were only 31 that met the criteria that Cochrane and his team set up?
A Yes, but I do not know what the 5,000 were. They do an enormous broad, as they have said later on.

H

Q I have read that bit.

A So I do not know what 5,000 represents but, yes, the outcome was 31.

Q I have included other parts of this because it seemed rather useful but that is all I want to refer to. If there is any part you want to refer to?
A I do not really want to go through the debate about it, no.

MR STERN: There is one other thing, I wonder if you may just have a look at this last document, please. (*Same handed*)

THE CHAIRMAN: That is D20.

MR STERN: This is not intended to be flippant, but as I have come to the end there is a point that lies behind it. Doctors do in fact change their mind about conclusions in relation to various things. I am not saying that doctors now change their mind and do not smoke Camels.
A That is why it is important to cite the most recent data and, if at all possible, the methodology behind it so one can decide how good it is.

Q The point is that doctors are not always right?
A No. Far from it.

MR STERN: Thank you very much.

THE WITNESS: Can I say one thing, to save any confusion? I gather that the Department of Health has just made an announcement about new growth charts, which will be different from ones we currently use. It was not those that I used for my calculation; it was the ones that were extant in 2002 that I used.

THE CHAIRMAN: This is in relation to which point?

THE WITNESS: It was in relation to the calculation of the mercury amount that was permissible on the basis of a child's weight.

THE CHAIRMAN: Mr Kark, re-examination from you.

<u>Re-examined by MR KARK</u>

Q On the slightly light hearted Camel document, you say that there is a danger in relying on old material?
A Well, yes. This is not actually a research study I guess, any way.

Q I do not think it was intended to be?
A I cannot see the reference to the study on it.

Q Just before we go back to some of the early parts of your evidence, could we just stick with your report and I am up going to ask you, in relation to schedule 8, and, therefore, page 75 of your report, to give us the up-to-date schedules. If we go back to page 75, the only reason I do this is because your report we have fairly conveniently ready, as it were, and I suspect that the Panel may later refer to it, therefore, it is probably

easier to amend this. First of all, on page 725 the date ought to be 2004. Is that right?
A Could either change the date or change the content. For the Panel I would have thought more appropriate is to change the content.

Q You are absolutely right?
A The date is 2002, the content though is different.

Q Age eight weeks?
A Age eight weeks should be diphtheria/tetanus/whole cell pertussis vaccine.

Q So we strike through the word "acellular"?
A Substitute "whole cell pertussis"; that just a name for the traditional vaccine that we were discussing. Also, instead of "inactivated polio vaccine", it ought to be "oral polio vaccine", which, of course, is given separately from the injection which is the four in one.

Q Was that a live?
A That was, yes.

Q So if we put, "Oral polio (live)", would that fairly reflect the position?
A Yes. Then exactly the same thing applies for 12 and 16 weeks.

Q Right, where it says "IPV"?
A Where it says "AP" to start with that should be either "WP" or just "P" by itself.

Q So "Acellular pertussis" should be "whole cell pertussis". "HiB" is the same?
A Yes. "IPV" should be taken off that combination and put by itself as "OPV".

Q Then…
A Then 16 weeks…

THE CHAIRMAN: Just to clarify, OPV is given as a separate…
A It is oral polio vaccine so it is the drops.

MR KARK: The drops, if you are lucky, in a sugar lump?
A Yes, although that went out ages ago because it is no longer PC correct to use sugar.

Q I am giving my age away!
A So you have the horrible taste of the drops. At 16 weeks it is exactly the same again. 12 months is correct and was correct. 3.5 – five years should be "DT whole cell pertussis" and the polio by itself. Then at school leavers it would be "low dose diphtheria/tetanus" and then the OPV by itself.

Q Right. The 11 to 14 years PCG remains?
A It remains accurate though it has now gone, but it was there at the time.

Q Was that part of the routine national immunisation…
A It was what every child in school would have been offered at that age assuming

A that they had a negative skin test for receiving it.

Q All right?
A My apologies.

Q Doctor, I am not going to regurgitate all of your evidence, everybody the room, I suspect, will be happy for that and you especially, but I do want to go back trough some
B of your evidence just to clarify certain matters that you said. The first matter that you were asked about was, in fact, in relation to your instructions. I am going to ask for a document to be handed out (Mr Stern has seen this). It is actually an extract from the letter of instructions to Dr Elliman. (*Same handed*)

THE CHAIRMAN: C6.

C MR KARK: I would suggest, it is a matter for the Panel what they do with it, that it might be useful for it to go somewhere near the beginning of Dr Elliman's reports so that you have all of the material relating to him there. Have a look at that, Dr Elliman, to bring it back to mind. It is in a slightly different form to when you received it because there was other material in the letter. Just casting your eye over it, I think that your attention was drawn to the general duties of experts as set down in the *Ikarian Reefer* case and then what the solicitors were suggesting your declaration should
D be and, I think, they also sent you part 35 of the Civil Procedure Rules, which Mr Stern has now put in. Do you recall some of that now?
A It would be dishonest of me to say I recalled receiving it in this form…

Q I can show you the letter you did receive, if you want to see it?
A I take your word for it. I just cannot remember the detail.

E Q Can I show you a copy of the full letter so that you see what you have actually got. I am not going to ask for this to go in (*Same handed to the witness*) because the only relevance of the letter, Dr Elliman, is the advice that you received in relation to the duties as an expert. Do you now remember that letter?
A It rings a bell, but as I say I could not answer – well I cannot answer for the detailed content.

F Q I understand that. According to the best of your abilities and your skill, did you follow the guidance that you had been given?
A Yes. Most certainly.

Q One of the things that I think you were asked to deal with, that does not appear in the extract, is to indicate your knowledge of the other experts in the case. Can I ask you
G again very briefly about that? How well did you know Professor Kroll or how often did you meet him?
A Of the order of – the committee itself met twice a year and, as I say, I cannot remember exactly how many years we overlapped and in between that perhaps once or twice a year, if that.

Q How big a committee was it?
H A Well in theory the Panel was of the order of 12 but it would not be unusual for

A only about eight to be there, but it was that sort of size.

Q What about Dr Conway; how often had you met him?
A That would have been at the committee and only at the committee.

Q Were you influenced when you wrote your report in any way because of your knowledge of either of those two men?
A No. I mean in fact most of my report is addressing Dr Donegan's report rather than commenting upon their reports.

Q Could you have Dr Donegan's first report available to you, please? We are dealing with diphtheria. What I am going to do is, I have a few questions to ask you but when I finish with the particular disease in order to try and make sense of the evidence, if there is anything else that you think ought to be added because there were various occasions when you looked at Mr Stern in a slightly troubled way – not Mr Stern's fault and say, "Will I have a chance to come back on that later on?" This is your chance and so if you think that I am missing anything please let us know?
A Right.

Q But if we start, please with the very first reference the reference, the reference that Dr Donegan was relying on for the end of the second paragraph, which was this comment on page 11 of her report:

> "Early treatment of diphtheria with antibiotics tends to render people susceptible to further attacks when the antibiotics are stopped".

I do not want to go through the argument again. Dr Donegan was relying on the 11th edition of *Harrison*?
A That is what I gather, yes.

Q You have now been shown that?
A Yes.

Q And it does seem to incorporate that phrase?
A It does.

Q Do you accept that that comment is still relevant? When I say "still relevant", I mean in relation to 2002 when this evidence was being presented. In other words, was it still a valid comment to make even though it was from an editions four editions out of date?
A I do not know if the current evidence would support that, and that is an honest, "I do not know", but it was not, as I said, in the 15th edition. I do not know if that is because it had been superseded by more recent information that suggested that was not so, or it was just not put in.

Q In your report at page 8 you said this, which was picked up on and I want to know whether you still stand by it because I think that you were shown a different figure. You said this:

A

> "Treatment is by supporting any bodily functions as necessary and giving antitoxic produced from horse serum. With good treatment 5-10% of patients die".

Do you want to revise that figure?
A Mr Stern correctly pointed out that there were figures down to, I think, three per cent in one study and, in fact, in the same study it quoted a range of three to 23 per cent so it is possible that my range was too narrow and if I had included everything in the papers that were provided it would have been anything from three to 23 per cent – and we are talking about deaths.

B

Q Is this…
Q This was one of the Russian Federation studies, I think.

C

Q I want to try to avoid, if possible…
A Sorry.

Q Not a criticism. I want to avoid delving too deeply into the research?
A Okay. I think that my estimate is still reasonable, but you could broaden it, both the bottom end and the top end, from the figures that were available.

D

Q Is the point that you make that there is still, even with modern day medicine, a good percentage of people who die from this disease?
A Certainly so, yes.

Q Dr Donegan's report page 11 again.

E

> "By the 1940S when a national immunisation campaign began, the death rate in children had dropped by two-thirds and continued to drop".

What you said in your evidence was that there is nothing there which is inaccurate; in other words there is nothing wrong with that sentence and I think you…
A That is correct.

F

Q ..agree still with that. There was the graph that we were able to look at. Mr Stern, I think, made the comment, with which you agreed, that the graph would speak to Conway and Kroll. You said that there is the text, however, that goes with it. The graph, I think, was taken from the book by Dr McKeown, is that right?
A That is correct.

G

Q If we turn up Dr Donegan's reference first of all (it is behind tab 2), what has been copied is page 98 and the top of page 99 and then in your report you have copied both pages separately…
A As far as I am aware that is because I have not got exactly the same edition but the page numbers and the text on the pages that have been copied is exactly the same.

H

Q Do you have the book actually with you, the edition of the copy?
A Yes, is the answer to your question. The answer to the next bit is...

Q Where is it?
A Yes. Exactly. It could be in my case, I am afraid.

Q Is it available? I would ask you to get it, if it is...
A Could we come back to it perhaps because I am going to have to rifle through things.

Q Okay?
A Unless you think it is important then I will...

Q I will come back to it but I will do so towards the end, I do not want you to have to rifle through your clothes, as it were, if it means that to find the book. Can we turn to the back of Dr Donegan's report because I am dealing with this in the order in which you were cross-examined. At page 67 of Dr Donegan's report there is the heading, "Factors affecting immunity". You were asked about pages 67 to 72. Do you remember?
A Yes.

Q You were asked really why you had dismissed those factors. You said, "I would say they have little relevance to the issue of whether vaccines work", and you dealt with this, if anybody wants the reference I think at page 46 of your report. Help us please, do you want to expand a little bit upon why you say that?
A Because as we have discussed before, the best way to find out if a vaccine is beneficial, if it works, is to compare like people and ideally like people, if you can, within your own population. All the references that have been produced suggest that a vaccine in whatever population against diphtheria, for example, reduces the chances of you dying or getting the disease. So, while the background in terms of nutrition et cetera may increase your risk of dying from the disease, the vaccine still makes a difference, and that was the issue before the court – whether it made a difference to these children having the vaccine or not and whether that was balanced by any risks that the vaccine would have in those children.

Q You were asked about the method of testing for diphtheria, and there came a time when notification for diphtheria, is this right, took place when a GP had performed a throat swab?
A Notifications of diseases are on the basis of clinical suspicion of a disease, and that may be with or without laboratory confirmation, but it does not have to be there. So, for example, a GP will notify a case of measles when a child is sitting in front of him with a rash et cetera. For diphtheria, the GP would usually notify a case if he suspected that someone would have diphtheria. Now that is extraordinarily rare, but occasionally someone will pick up a throat swab with the germ in it, and that will go into the notifications.

Q Because they be swabbing for some other reason?
A Yes, but most of those will not turn out to be diphtheria. It is something that is there but not causing a problem.

Q I think it was suggested that there might be a degree of under reporting of those vaccinated?

A If you were reporting say a common disease like whooping cough, that is a real danger and there have been studies that have shown that. When you are talking about something that is as serious and as rare as diphtheria, the chances of under reporting are remote.

Q I was also going to ask you this: if you have diphtheria, are you very likely to want to trot along to see your doctor?
A If you are not so ill that you cannot do so, yes. It is a very serious illness.
Q Can we turn to the issue of thiomersal? Can we turn up a defence document, which I have noted, I hope right, as D6? Have you kept your defence documents?
A Yes, I have. Bear with me while I dig it out. (*Pause*) This is the one headed, "Adsorbed Diphtheria Vaccine for Adults"?

Q Yes, that is it. As I understand it, this was the basis for the comment made in Dr Donegan's report. As we can see from the bottom of it, this is a leaflet produced in January 1999 and it relates to adsorbed diphtheria vaccine for adults?
A That is so.

Q Is that the same vaccine that is given to children?
A It is in essence the same vaccine, except that in children the dose would be higher by a magnitude of something like six or seven, and it would usually be given combined with the tetanus and the whooping cough, and at the time in question the HiB as well, depending on the exact age of the child.

Q What effect, if any, does that have on the amount of thiomersal?
A It has no effect, because usually the amount of thiomersal is per dose of vaccine. So, if you have diphtheria vaccine separately and tetanus vaccine separately, there will be a dose of 25mcg in each of those. If you give a preparation that is a combined diphtheria/tetanus vaccine, there will usually be 25mcg in that.

Q It does not go up?
A No.

Q This paper refers to the fact that if someone thinks they may be allergic or sensitive to any of the ingredients in the vaccine that are listed, in particular to thiomersal, which can cause kidney damage, that would be a precaution before use. How would you know if you were allergic or sensitive to thiomersal?
A It is unlikely that you would know. In fact, it is very unlikely that you would know, unless you had obviously had something that contained thiomersal before, which would be either a dose of that or a similar vaccine, or there are some topical preparations – things that you apply to the skin, for example – that have thiomersal in them, so you might know it from that route. What this is referring to is having a sort of allergic reaction to it.

Q In relation to the amount of thiomersal that is used or was being used in 2002 in this country, was there any science or research at all to support the suggestion of kidney damage that you are aware of?
A In the doses used, no.

A

Q Did that warning therefore, in your view, have any relevance to the children who were involved in this case?
A If they had not had a previous reaction to thiomersal, then it would not be relevant to them. My understanding is that they were totally unimmunized, so they will not have had thiomersal in the form of a vaccine. Nowhere in any of the reports have I seen that they were allergic to thiomersal.

B

Q Can we turn to page 18 of Dr Donegan's first report?
MR STERN: Before we move on, in Dr Donegan's report on page 12, just in case there is a misunderstanding in relation to it, just above the words "Vaccination recommendation", the part that my learned friend is dealing with, it specifies that it is in relation to an adult.

MR KARK: Yes.

C

THE WITNESS: The cut off for an adult is 10, so, depending on how long anything took to take place, it might apply to the older child.

MR KARK: Let us just go back to that for a second. I take your point, but if we go back to D6, this particular vaccine seems to relate, if we look about two-thirds of the way down the page, to those adults and adolescents from 10 years of age and the elderly who need their immunity to diphtheria boosting, who will be given this vaccine. Does that mean what it says? In other words, does it mean that this particular vaccine is used only for boosting?

D

A No. It is right that you give it for boosting, but you would give it for a primary course as well. I do not know why it has that there.

Q Let us move on, please, to Dr Donegan's report at page 18. She was dealing there with the incidence of pertussis death and disease falling well before the vaccine was introduced. I think you accepted that there were a number of factors that reduced death from pertussis other than vaccination?

E

A Yes.

Q Nevertheless, is it your view, and does the research support the view, that vaccination was a significant cause?

F

A There is a big body of research which shows that vaccination reduces the incidence of the disease in almost any setting that you like to mention.

Q You say on page 15 of your report that Dr Donegan states that because of continuing increases in pertussis notification in the UK, especially in young babies, an accelerated schedule of vaccine was introduced to try to reduce the incidence of disease. I think her reference, or one of them, is at tab 14 of her bundle. Can I just ask you this, to try to deal with it in a global way: I think Dr Donegan at page 21 says that the number of deaths increased?

G

A Page 21, I think the third paragraph, the Japanese raised the vaccination age…", or was it the experience in the UK that you were referring to?

Q The experience in the UK actually.

H

MR STERN: I think it is the last line of the second paragraph.

MR KARK: Yes, it is. Thank you very much.
Q Starting at the beginning:

> "Questions have also been asked about the incidence of invasive bacterial infection in children who have recently been vaccinated against pertussis. A 'natural experiment' took place in this country when the acceptance (of) the vaccine fell dramatically in the mid 1970s to the mid 1980s and there was an accompanying fall in the number of deaths of children aged four years and less from invasive meningococcal disease. The numbers began to rise again as vaccine uptake increased."

I think your reference is your tab 15. I just want to understand what you are saying from the research. Do you have tab 15?
A Yes, I do.

Q It is headed, "No Increased Risk For Invasive Bacterial Infection Found Following Diphtheria-Tetanus-Pertussis Immunization". At the bottom of the abstract, you say:

> "These data provide reassurance that the use of DTP vaccine is not followed by a large increased risk of serious bacterial infections."

How does that sit side by side with Dr Donegan and what she has produced?
A Just to be absolutely clear, we are referring to the paragraph on page 12, looking at a possible relationship between having pertussis vaccine and being more likely to have other infections after it?

Q Yes.
A This is one of the papers that addresses that issue. In children who have had the vaccine, are they more likely to end up in hospital because of, in this case, invasive bacterial infection? Invasive bacterial infection would include meningococcal disease, whether that is meningitis or septicaemia. So this paper is looking at the issue in general, not just for meningococcal disease, and saying that if you have had whooping cough immunization, is the child more likely to have a severe bacterial infection? Answer: no.

Q Could I ask you to go to page 19 of Dr Donegan's report? It is just to pick up on the third paragraph and the use particularly of the word "damage" – "Does the vaccine cause brain damage?" First of all, is there a difference, in your view, between brain damage and a neurological reaction?
A A neurological reaction or a neurological illness would be something where a person has clinical manifestations of a neurological nature – fits, epilepsy, they could not walk properly, or something of that nature. "Damage" implies that there would be something that has happened to, in this case, the brain, which has caused – I cannot think of the words to put it in – a permanent thing, that there is a hole there or something has been altered.

Q She begins that paragraph with the words, "Does the vaccine cause brain damage?" and ends with the words, "However, even with this timeframe" – and I think this is referring to the NCES study – "it was shown that those with severe neurological damage were 2.5 times likely to have been vaccinated…"?
A Yes. I think that in the NCES there were two bits to their study. One was whether you were likely to end up in hospital with a neurological reaction, and there was another bit, which was whether this is an ongoing problem, and that would be what most people would equate with damage.

Q Were there issues about the NCES study, in other words, problems with the research?
A Yes.

Q Are you able to give us a thumbnail picture of them?
A They have been criticised, so they were probably right, because they have been criticised by just about everybody, those who think that it underestimated the side effects from whooping cough vaccine and those who think that it overestimate the side effects. It was used in a court case some years ago, *Loveday v Renton*, and the judge, who I think had a further qualification in epidemiology, pulled it apart and came to the conclusion that it did not prove that there was a link between neurological damage and pertussis immunization. There have been some other studies subsequently that have supported that but, as I say, there are other people who say that the risk is greater.

Q Can I ask you to go to page 21 of Dr Donegan's report? You were cross-examined about the Japanese experience and I just want to ensure that we have all understood what happened. I think you were also given another document, which was given the number D9.
A I am afraid I did not keep up with the numbering.

Q It is headed, "Special Communications – Acellular and Whole-Cell Pertussis Vaccines in Japan". I will ask my instructing solicitor to pass you her copy, just to save time. (*Same handed*) Dr Donegan's comment, just to remind ourselves, is on page 21, two-thirds of the way down:

> "The Swedes abandoned the whole cell pertussis vaccine in 1979 because of worry about side effects and because of its perceived ineffectiveness as whooping cough swept through its population of whom the majority was fully vaccinated. The Japanese raised the vaccination age to two years in 1975 after a number of reports of severe reactions and deaths. This reduced the total number of deaths in infants younger than one year."

So that was the comment that you I think criticised?
A Yes.

Q So that was the comment that you criticised?
A Yes.

Q Do you still stand by that criticism?

A I do, yes.

Q If we go to D9, which was a report of a visit by US scientists and it is dated March 1987 published in JAMA, under the heading: "Background":

> "Whole-cell pertussis vaccine came into use in Japan 1947. Their administration became mandatory as part of the preventive immunisation law of 1948. Vaccination consists of three doses given approximately one to two months apart beginning at approximately three months of age with a booster dose approximately one year after the third dose. Most vaccinations were and still are provided free at mass immunisation clinics. The reported incidence of pertussis in Japan fell rapidly from the introduction of vaccine - … deaths decreased correspondingly."

Then over the page, to the right hand, a third of the way down:

> "In a two month period in the winter of 1974-1975, two infants died within 24 hours after receiving diphtheria and tetanus toxoids and pertussis vaccine. While these events were being investigated, recommendations were made for temporary suspension of the use of DTP. Two months later, routine use of DTP was again recommended. However, the recommended age of initial administration was raised from 3 months to 2 years as a precautionary measure to avoid other coincidental occurrences."

Help us with that phrase if you can?
A My understanding of the concern that caused the withdrawal of the vaccine was at least in part two children who had died a cot death soon after. Cot death would be extraordinarily rare after a year old but is one of the commoner causes of infant mortality. That is, of course, under a year is when you are giving the vaccine. So purely by coincidence there will be children who die a cot death and have had a vaccine. If you move the vaccine age up until a year old or older children are not commonly dying a cot death. So those coincidences of having the vaccine and having a cot death will not occur, or at least will not occur with a same frequency. There are other things that the same logic would apply to.

Q The article reads on:

> "Also it was believed that the incidence of adverse events caused by, or temporarily associated with pertussis vaccine might be higher during infancy."

Does the same apply to that comment or not?
A For the whole-cell pertussis vaccine, which was the one that was in use when they made those changes, if anything, the evidence is that the true side effects, those that are generally accepted, are commoner in older children. So having a temperature, having a local reaction is commoner in an older child. There are some reactions that are say a febrile convulsion will be commoner during a window of about six months old to 18

months old just because febrile convulsions are commoner and if you give the vaccine it causes a fever, etcetera. So it is a bit more complicated than being commoner or less common. Its depends on the condition a little bit.

Q Again just the next line:

> "In addition, it was believed that vaccinating children of two years of age and over would help prevent transmission of disease to infants and younger children."

So is that a sort of micro form of the herd effect?
A It is but it, of course, means that people under two are still a reservoir for disease, so it will not eradicate the disease.

Q Then over the page, I think this was referred to again also by Mr Stern, if it was not we will now, middle paragraph:

> "Following the decline vaccine use, there was a significant increase in the reported incidence of pertussis, reaching a peak in 1979 when 13,105 cases were reported and 41 deaths were recorded. Vaccine acceptance gradually rose."

On the right had side:

> "The overall reported incidence was higher 1984 than in the early 1970s, in spite of higher reported coverage levels with vaccine. The reason for the apparently higher incidence cannot be established with certainty; however, the difference between the two time periods could be due to improved reporting of disease in the later period."

All of that to really ask you the short point, having looked at this article that was produced to you by Mr Stern has your view changed in any way in relation to the accuracy of
Dr Donegan's comment, depending on how it is taken, of course?
A No, it has not changed at all.

Q I should have asked you, was there anything else you wanted to say first of all about diphtheria?
A Not that is material, no.

Q Or pertussis?
A No, no.

Q Can we turn to polio. I do not have anything to ask you about tetanus. I was going to turn to page 34 unless you had anything you were burning to tell us?
A I do not, no.

Q We also have to turn to Dr Donegan's tab 46 in Donovan bundle 1. This was in relation to the Oman experience and can you just help us, I think you said it was

A standard---

MR STERN: Sorry to interrupt, I just want to help, if I may. Dr Donegan's reference divider 46.

MR KARK: I meant the first bundle of references. Thank you. Thank you, Mr Stern. Tab 46, bundle 2. This is the Oman experience. You said in your evidence it is standard to give three doses of polio vaccine?

B A That is so, yes.

Q That is so in the UK?

A I hesitate because I am not sure that there are any countries where it is not standard. When it is part of the routine schedule it will be always three doses, I think, as the primary course. It is the WHO recommendation, etcetera.

C Q This article by Sutter and others dealt with the widespread transmission of polio among fully vaccinated children, or at least that is the heading of the article, and if we go over to page 718. I want to understand what the article is actually saying and how much of it you agree with. On the right hand side we can see this section under "Poliovirus transmission amongst vaccinated children":

D

> "Vaccination coverage with 3 doses of OPV at the time of the outbreak was 87% for children aged 12 months. Based on a reported number of cases the overall attack rate of paralytic disease in children 9-23 months was 57/100,000."

I want to understand what is said then:

E

> "There was no correlation between vaccination coverage and attack rates by region. The region with the highest attack rate had one of the highest coverage rates, whereas the region with the lowest coverage had a low attack rate."

I suppose one could read the words "…there was no correlation…" in a number of ways and I want to your assistance, please?

F A I think it is represented pictorially on the next page where there are two things, which are not labelled very well actually, but there is a graph which is a linear graph which talks in terms of percentage which is the uptake of the vaccine.

Q Which goes from the left hand side from 95% to 88% on the right hand side?

G A Yes, there is variation, as you can see, there is one that is down to 71% but it is just related to each of the regions, so one should not take any note of whether that graph is going up or down, except to say that if you look at the bottom, which is the blocks, these are the number of cases or the rate of paralytic polio so in, I am afraid cannot read the one at the far left---

Q Musanadam.

H A So that is no cases of polio with an uptake of 95%, then capital has a very few cases with the lowest uptake. Then, as you can see, there really is no relation. If there

A was a relation between uptake of vaccine and cases you would expect that line graph to mirror the columnograph. The lowest numbers of cases would equate to the highest---

Q You would expect to it start off very low down and then when the uptake goes down to 71% you would expect to see an increase and then a decrease?
A That is right, yes, yes. So if you put what you would expect if it was purely related to uptake of the vaccine you are not getting that at all in that line.

B

Q I am not going to go through the whole article. Mr Stern has been through much of it. There are references there, obviously, to the problems that there may have been in the various regions and I think you told us that the polio vaccine is one of the most fragile?
A It is. It needs to be stored cold otherwise you kill the germ and it not does work.

C Q It is fair to say they do say at the top of the right hand column:

> "We did not find any deficiencies in the cold chain that could account for these findings. Although our methods may not have been sensitive enough to detect minor fluctuations"?

A Yes, and they talk about 91% protection in three doses.

D Q Then two-thirds of the way down the right hand column:

> "These findings have important implications for the World Health Organisation's initiative to eradicate polio globally by the year 2000. The most important thing to achieve this goal is to raise OPV coverage to greater than 80% by one year of age adhering to the recommended schedule of 4 doses"?

E

A Can I explain that because it may seem contrary to what I have said. In countries where you have a very high incidence of polio they give an extra dose at birth. So that would not apply to the western world but somewhere like Oman, India, Africa they would give four doses. So one at nought and the routine that everybody else, plus or minus, gives.

F Q This article was being referred to in relation to this sentence and then I will move on, this is the top of Dr Donegan's page 34:

> "As the World Health Organisation struggles to achieve its aim of world wide eradication of polio it is notable that epidemics of paralytic poliomyelitis have occurred in highly vaccinated populations and tragically immediately after a polio vaccination has occurred."

G

You have accepted that?
A The vaccine can cause paralytic polio in some of the recipients, yes.

H Q So far as the Oman experience is concerned and, indeed, the Indian experience is

concerned do those have relevance to 2002 in the United Kingdom?
A They have very little relevance in the sense that why the programme did not work would not be relevant to this country. They do have some relevance in the sense that they do provide estimates of how well the vaccine works which is different from the programme. The programme depends on you delivering the vaccine to lots of people but they did arrive at estimates of what is the risk of you getting polio with and without the vaccine and there was a very beneficial ratio in favour of having the vaccine.

Q Let me move on. We turned on Friday morning of last week to Hib again where Dr Donegan relied on the 11th edition of Dr Harrison's book. Again, I think we had an extra document put in which was D11 and, again, this was from the 11th edition of Dr Harrison's book and, again, you may want to check in the version you have got but can you help us, it is the same point in a way but how often is this book published?
A I honestly do not know. It would vary. I mean it might be a long gap, it might go a short gap but the 11th edition was 1987 and the 15th edition was, I am afraid I cannot off the top of my head remember, but it was something like the fourth edition in, give or take, ten years, I think. Someone has got a better memory.

THE CHAIRMAN: Dr Goodman thinks it is every four years.
A Well, I think if the 11th edition was 1987, the report was written in 2000. I do not know. It is of that order. Perhaps a little less.

MR KARK: Again, do you know, it may be that you will need to have reference to the 15th edition, do you know the extent to which the 11th edition and the 15th edition part company?
A I do not because I did not have the 11th edition. I have only got what has been tabled. I think the other important thing that, I think, Dr Goodman touched upon was change in authors. That usually means a more major rewriting than just a change in edition.

Q And a review of what has gone before or not?
A If you change author most authors would almost go back to square one. If you change edition there is a tendency, and I admit myself doing it, you just update what you have written rather than re-examining everything in detail.

Q My next note is that you were going to provide some material in relation to the blunting of the cyclical nature of meningitis by use of vaccine. Since is it is one o'clock that might be a convenient moment to allow you to pause. Do you remember that, first of all?
A I do remember that. I am afraid that I did not do that bit of work over the weekend.

MR KARK: All right. Would that be a convenient moment?

THE CHAIRMAN: Yes. You are not setting Dr Elliman to go about it now, are you?

MR KARK: I am not going to set him home work to do over lunch, unless it is very easily findable, but I would ask him to find the McKeown book, please.

THE CHAIRMAN: We will adjourn for lunch and return at two o'clock.

THE WITNESS: It depends how important you think it is. It will be on the internet, I think in the most recent edition of the Department of Health book, but that was not available in 2002. You know, to be fair I would have to find something that was available in 2002 and that will not be quite so straightforward.

MR KARK: Can we deal with it this way: do you say that there is a blunting of the cyclical nature of the disease by the use of vaccine or does the cycle just…
A It depends which disease and how long after the introduction, so for example: for measles we have almost got rid of that; for whooping cough there is still something of that nature; for meningococcal disease the cyclical pattern is much, much broader and we would not be able to say.

MR KARK: I do not think you were seriously challenged that so I am not going to ask you to do any work on that over lunch.

THE WITNESS: Thank you.

THE CHAIRMAN: Do you need to discuss anything more because you are still under oath *et cetera*?

THE WITNESS: Other than to get out a book from my smalls, nothing else.

THE CHAIRMAN: Yes.

THE WITNESS: Can I ask, through you, something? I did a calculation based upon weights of children. Can I ask if Mr Stern is happy with that or does he want me to try and get hold of a reference to the weights of children?

THE CHAIRMAN: Mr Stern?

MR STERN: I do not require any more information, thank you.

THE CHAIRMAN: Thank you.

(*The Panel adjourned for lunch*)

MR KARK: I think you were going to find in your suitcase a copy of the book, I just want to have a look at that with you. Have you found it?
A I have, yes.

Q Can you hold it up so that we can all see what you have got?
A It is the one that is in my bundle of references.

Q That is what we have got at your tab 6, I think, and it is tab 2 of Dr Donegan's file. Does that correlate exactly to – if we look in Dr Donegan's file, first of all tab 2, I will not spend too long on this as we have been over this ground, but the first two-thirds of the page of Dr Donegan's tab 2 in file 2?

A Yes.

Q Does what you have in your hand correlate exactly with Dr Donegan's first page behind that tab?
A It does, yes.

Q We can see that page 98 has been copied, but then page 99 – if you hold it up to show us, for those who have not got your report, it actually…
A 98, 99. (*Indicating*)

Q It is on page 99, underneath the graph, of course, that we have the further words upon which you have relied?
A Yes.

Q So whoever copied it seems to have chopped off the last part of that article. I wanted to ask you about suspension of the meningitis vaccination programme in the French schools (that is page 45, I think, of Dr Donegan's report and it is your reference tab 27). I want to ensure that we understand what actually happened here. First of all, Dr Donegan's report page 45 second paragraph on that page:

> "Safety. The control group in one of the three trials of this vaccine was of children who are vaccinated with Hepatitis B, which is problematic bas it is not without its own side-effects, such that it has been removed from the schoolgirl vaccination programme in France due to an association with multiple sclerosis".

First of all, is it right; was that suspended from the routine programme in France?
A It was no longer given as part of the school child (so girl and boy) programme, within school. I am afraid I have not got it, but it was still given but in general practice.

Q But was it given as a routine immunisation or only given to those who asked for it – do you remember what the change was?
A It was part of the routine schedule but any routine schedule in most countries, it is voluntary so a parent usually presents themselves for it.

Q It is your reference 27?
A Yes.

Q

> "On 1 October 1998, the French Ministry of Health announced the decision to suspend routine HB immunisation of adolescents in French schools while continuing the immunisation of infants and high risk adults. This followed concerns, despite lack of scientific evidence establishing a causal relationship".

So was the vaccine withdrawn at this stage?
A The vaccine was not taken off the market and it was not banned from use in general, no.

Q Can I say, really for the purpose of the Panel rather than you, Dr Elliman, I know Mr Stern was keen to put in documents relating to a criminal case in this year – I do not think the criminal case has happened yet – and he suggested that I wanted to keep them from you. In a sense I do because you can only receive material, which is relevant to the considerations that you have in relation to these proceedings and these proceedings relate to reports which are in 2002. I do not shy away from the fact that, yes, I do say that you should not have them because they are totally irrelevant unless Mr Stern can argue that there is a relevance to the reports that were written then by Dr Donegan. I say that in passing. I do, I am afraid, still object to that material and I do not know if Mr Stern wants to argue it.

(*To the witness*) Let me then move from France to America and go to page 46 of Dr Donegan's report. I think it is Dr Donegan's tab 77 C2. Can we look first at Dr Donegan's statement report page 46 and can we look at what she wrote? Dr Donegan's reference bundle file 3 and it is tab 77. I am going to go back to Dr Donegan's report first of all where, two-thirds of the way down page 46 she writes:

> "The meningococcus C vaccine only has an effectiveness of disease caused by meningococcus C. As is the case for the HiB vaccine, it is to be expected that as disease with one type declines, there will be a drift to more for diseases caused by others. This has certainly been seen with the polysaccharide meningococcal C vaccine. When used on US forces the incidence of meningococcal disease",

I think you take issue with the word "disease"?
A Yes.

Q The acquisition of the virus as opposed to the disease manifesting itself?
A That is right, yes.

Q

> "When used on US forces the incidence of the meningococcal C disease was reduced two to three times but the total meningococcal acquisition rate was essentially the same regardless of vaccine status".

Let me go back a stage, here she was properly talking about disease, was she?
A Which particular line – the two to three times?

Q Yes?
A Yes. That was.

Q You said when you were being cross-examined by Mr Stern, no, it was actually reduced ten times?
A Yes. There is a difference between "acquisition" and "disease"; "acquisition" is having it in your throat and "disease" is actually having a manifestation. The acquisition – and this is on page 419 of the paper in tab 75 of Dr Donegan's...

Q Give us a second to look at that?

A It is tab 75 page 419 of the paper, which is in the top right-hand corner.

Q Do you mean tab 75?
A Sorry tab 77.

Q Page?
A 419.

B

Q Yes?
A On which there is a table on the left-hand site labelled "table 2" and below that there is some text.

Q Right?
A In the text it says, "It should be noted that whereas group C acquisition", and I presume that is rates, "were reduced two to three times". So it is the rates of acquisition carrying the germ in your throat that was reduced two to three times, not disease.

C

Q Then immediately opposite that is table four, which shows the rate of disease, so cases and attack rates, for…

Q Between vaccinated and non-vaccinated?
A Yes. For group C the rate is 0.07 in vaccinated and 0.7 in non-vaccinated; so there is a ratio of one to ten there.

D

Q So in terms of the actual attack rate, in other words the disease rate, the disease, you say, was reduced ten times?
A Yes. You would always have to say within certain confidence intervals or whatever, but that is the figures here.

E

Q Going back to Dr Donegan's report, to make her sentence accurate we ought to change either the word "disease" or the "two to three times"?
A One or the other, yes.

Q It should either be, "When used on US forces the incidence of acquisition of meningococcus was reduced two to three times", or it should be, "When used on US forces the incidences of meningococcus disease was reduced ten times"?
A Yes.

F

Q All right. She has relied on this piece of research, and I want to ask you how understandable, how comprehensible, this is to someone reading it with a medical eye? As a layperson coming to this, quite frankly, one might easily miss the distinction that you have just made so clear, but to a doctor what do you say?
A It is a complex topic, but the table nicely sets out the attack rates, so, even without the text, you have got it there. The acquisition rates, it does say, there is a sentence that actually says that acquisition rates were reduced two to three times. So it is all there and I do not think that if one knows what one is looking for, it is difficult to find.

G

Q In fact, in Dr Donegan's sentence, she distinguishes between the disease and the acquisition rates, because she goes on to say, following from the line, "When used on US

H

forces, the incidence of meningococcal disease was reduced two or three times but the total meningococcal acquisition rate is essentially the same regardless of vaccine status", and you say that that is wrong as well?
A Yes.

Q I did not mean to put words in your mouth and I am sorry about that, but I thought that it followed from ---
A I would need to look at my report to check exactly that, but if that is what I put in my report…

Q Let us start again. I was relying on the report that we have just looked at, if this is what furnished the information, as it were. "When used on US forces" – unless there is some other report that it was US forces…
A No.

Q "When used on US forces, the incidence of the disease was reduced two to three times but the acquisition rate was the same". That would not be clear from what you have just said, do you follow, from this research?
A No, and it is also not really relevant to the vaccine that was in use at the time.

Q That was a question that should have been at the front of my mind. Was this in fact relevant to these two children in 2002 at all?
A No, it is not relevant, because the vaccine that we now use is a changed vaccine, quite a different vaccine with very different qualities, and in fact one of the qualities that is very different is that it stops you, or at least markedly reduces the chance of you carrying the organism, so that is acquisition…

Q As well?
A …would be even less than it was in this study.

Q Could I move on then, please, to page 49 of Dr Donegan's report? I think there are two matters that I want to make sure we all understand from your evidence. The second paragraph down on page 49 reads:

> "Measles disease may depress cell mediated immunity for up to three years. The vaccine virus is attenuated but has similar characteristics to the wild virus so it would be expected to have the same characteristics."

First of all, "Measles disease may depress cell mediated immunity for up to three years", that is speaking about the disease, not the vaccine?
A If you have measles disease, your immune system may be affected for up to three years, yes.

Q I am not going to ask everybody to go to it. I think it was Dr Donegan's reference 85 and it was clearly referring to the disease because it distinguished between those who had the measles disease and it was comparing those with vaccinated children. If you want to check, it is tab 85.
A It is actually quite an important point and it is something that I was tasked to do

over the weekend, so did it.

Q Then let us turn to tab 85. It is Dr Donegan's bundle 3 and tab 85. In fact, I think you offered to read the Guinea-Bisseau report over the weekend, which either you enjoyed doing or did it, but did you do it?
A I did do it.

Q Can we just look then, please at this report? First of all, it was published in 1996 in the BMJ and the heading is, "Cell mediated immunity after measles in Guinea-Bisseau: Historical Cohort Study". It was by Dr Shaheen. I cannot remember whether Dr Shaheen is a he or a she?
A I do not know.

Q In any event, the abstract reads:

> "To investigate whether children who have had measles have reduced general cell mediated immunity three years later compared with vaccinated children who have not had measles."

I am afraid I am going to go straight to the conclusions:

> "Reduced general cell mediated immunity may contribute to the higher long-term mortality in children who have had measles compared with recipients of standard measles vaccine and to the higher child mortality in the rainy season in west Africa."

First of all, tell us what you want to, please, about the report itself?
A What they compared was a group of children who had had measles disease with a group of children who were vaccinated and did not have the disease. Within the group of children who had the disease, there were children who just had the disease and some who had the disease in spite of being vaccinated. I think it is worth pointing out that they did the analysis which allowed for the group of children who had been vaccinated and had the disease being taken out of the disease group, so there was a direct comparison vaccinated and disease group unvaccinated.

Q So that confounding factor, if it was one, was taken out?
A Yes, because it is reasonable to raise that as a theoretical issue.

Q Was there any more, having read the report again?
A No, that was anticipating a potential question.

Q That is the first matter. Dr Donegan then writes:

> "The vaccine virus was attenuated but has similar characteristics to the wild virus so it would be expected to have the same characteristics."

If – and it will be a matter for the Panel – she was intending to convey that therefore the vaccine would depress cell mediated immunity for up to three years, is that supported in

any way by this research?
A Not at all, no.

Q She writes:

> "Indeed, a high titre measles vaccine used in populations in Africa caused higher death rates in girls from other infectious diseases compared to boys or unvaccinated girls."

First of all, to the best of your knowledge, is that correct? Is that supported by research?
A There was an issue about young babies getting measles and it was thought that one way of immunising them would be to give them high titre, so that is a measles vaccine that has more of the virus than standard in it, so a number of studies were carried out to see what happened, and indeed what Dr Donegan has reported is that children given this vaccine often had more problems than without, so it was withdrawn some years ago and was never used in the west.

Q It was withdrawn in Africa?
A Yes.

Q When, do you know, approximately?
A No, I do not, but by the time this paper was written it had been withdrawn, so that was 1996, so it had been withdrawn by then.

Q Secondly, had it ever been used in Europe?
A Not that I am aware of, and definitely not in the UK.

Q Then she finishes her comments:

> "To give a vaccine that has such an effect on the immune system at the same time and in the same needle as two other live viruses is, in my opinion, risky".

Did any of this in fact, to the tutored eye as it were, have anything to do with these two girls at all?
A High titre measles vaccine has never been used in the UK. Well, it has never been used, so it certainly was not used in the MMR that was current at that time and, as far as I am aware, has never been used in any MMR vaccine anywhere in the world.

Q I do not know, but would you have expected Dr Donegan to know that?
A Oh! yes.

Q Can we move on to page 54, please, of Dr Donegan's report? It is on a similar topic. If we can go to halfway down the page, you made a comment that I just want to ask you to confirm, please. You were cross-examined about this section in the middle of the page. Under the "SSPE" heading, she writes:

> "A report in the British Medical Journal from the Communicable Disease Unit at the London School of Hygiene and Tropical

A

> Medicine (1996) stated that after the 1994 measles rubella campaign, there were 530 severe reactions reported…" –

You have already dealt with this in your evidence-in-chief, saying that it was suspected –

> "… one per 13200 vaccinations and higher than the one per million usually quoted."

B

A Can I stop you there? I am not sure what the one per million refers to, because, for example, it is accepted that MMR vaccine – and it is due to the measles component so it would apply to the MR vaccine, which was what was used in the 1994 campaign – would have given an incidence of febrile convulsions of the order of one in 2,000. So, if one is talking about convulsions, one would never have talked about one in a million. One would accept that convulsions would be much commoner. The fact that this is a different age range will influence that, but I have no idea where the one in a million comes from.

C

Q Or what it relates to in terms of severe reactions?
A No.

Q Then this, which is really what I was coming to:

D

> "One report of SSPE occurred one month after vaccination."

We know that the actual quote from the material tells us that it was unlikely to be due to the vaccine?
A Yes.

E

Q Again I am not going to take you back to repeat your evidence, but what you said to Mr Stern was that Dr Cutts was saying, when analysing the brains of children who had died of SSPE ---
A No, she did not say that, but that is probably what she was relying on.

Q It is my bad note, but she had found measles in those brains?
A There are studies that have looked at the brains of children who have had SSPE because you can find the measles virus there. You can then examine the measles virus and you can tell the origin of the virus, whether it is a vaccine strain or a wild strain, and on every occasion that has turned out to be wild virus.

F

Q That is what I wanted to ask you, just so that we all understood that. The only evidence that Dr Cutts produced was in relation to SSPE events always attributed to wild measles?
A Yes.

G

Q In this case, where there is a reference to "One report of SSPE occurred one month after vaccination. The child had a history of natural measles infection some years earlier", do we in fact know what the pathology was?
A No. I have not seen it written up anywhere.

H

A

Q But in all the research that you have read, have you come across any evidence to support the contention that the measles vaccine has caused an SSPE?
A All the data on the recovery of measles virus has been that it is wild virus. It would be difficult, as we have talked about before, to absolutely exclude a negative, and in some cases you will see in journal articles a supposed possible incidence of the disease after the vaccine. But, as I say, when people have actually examined children, none of them has turned up with anything to back that up.

B

Q You are obviously an expert in your field, but is that the sort of research that is just buried too deep to find or would you expect an expert in this field to have understood that?
A I think that one is a little difficult. It is not in obscure journals. It would be unfair of me to comment before looking at the titles of the journals. For example, I do not think that that has necessarily appeared in the BMJ or the Lancet, so not necessarily the mainstream medical journals.

C

Q Can we turn, please – and again I hope to deal with this quite quickly – to the issue of mumps giving protection from cancer? I think you mentioned one further report and then another report. There are two reports. I think it is your reference tab 36, and it was tab 106 for Dr Donegan's reference. Is this the Raymond West study?
A Yes.

D

Q You made the point about this study that the people involved in it knew what it was all about?
A Well, the methodology does not allow one to say whether or not they did, and therefore it was not, as far as one can tell, blind, so they might.

Q If it is not blind, it would potentially weaken the conclusion?

E

A It would, and it would depend on what you were asking them about a little, and they gave I think two other examples of what they asked them about. One was a history of x-radiation. Well, I think you would remember that. It would stick in your memory, so that is reasonably reliable, though even that is subject to a problem. The other one was a history of – I am not quite sure what this means – internalisation of hormones, and I cannot comment on that, but you would expect the x-rays to stick in their minds; a history of mumps, not so good at all.

F

Q I think what you said was that someone now would critique that quite strongly?
A Yes.

Q When you say "now"…?
A Within the last 20 years.

G

Q Because the report in fact dates back to 1965?
A Yes.

Q If you were writing a report, first of all, one would be entitled to put some weight on this report, would one not?
A I think one of the things that is important is that as long as one spells out clearly the limitations, then it is potentially publishable, but if there are better studies, then it will

H

not be published.

Q I think you produced the Chen report?
A Yes.

Q My note – and I have not checked back from the transcript, which I should have done – is that there was a second further report?
A Yes, Mr Stern turned up one, and he also pointed out that within the Chen study they did look at a history of mumps.

Q They did indeed.
Q They did. Can we have a quick look at Chen, please, and it is tab 36 of Dr Elliman's bundle, so it is tab bundle 5 and it is tab 36 and it makes mention, I think, of the earlier report, the West report?
A On page 27.

Q Indeed, left-hand side?
A Yes

Q

> "Contrary to an earlier report, no protective effective of the multi-virus infection was observed in this study."

This Chen study was actually slightly smaller than the West study, I think?
A Yes, I think it probably was. Well, no. The Chen study, this is reading the abstract on the front, 112 pathologically confirmed cases and the West study was 97. The Chen study used two controls for each case and the West study used one control for each case. So it was marginally larger but a larger number of controls.

Q So provided it is put into context as to the weight of the report and the fact that there has been another report since, one would be entitled to make reference to it?
A Yes.

Q But one would have to bear in mind that it was written in 1966?
A With the proviso that we have said before; as long as it is described properly it may be acceptable.

Q This morning you were asked questions about neomycin and the fact that in the Finnish study the placebo contained neomycin and you have said the quantity in the vaccine would be non-biotoxic?
A It would not be toxic in the sense of causing damage to an organism other than if you had an allergic reaction.

Q Hoping not to have to go into the detail of the Finnish study, if it was not the neomycin what is the answer? What caused the incidence that there were? There were problems with those who had received the vaccine and those who received the placebo. Did they have a third control or a second control, as it were, of people who did not receive anything at all?
A No, and the reason they did not have that was because they were trying to make it

A

blind. So I suppose the best you could do with nothing would be to take a needle and syringe, stick it in the child but not inject anything. I am not aware of that ever happening anywhere. The answer to your explanation: what if it was not a neomycin? Children get infections all the time. That is why you need to do control trials to make sure that any effect you attribute is above what you would expect from background rates.

B

Q In any event the neomycin or the quantity of neomycin that would have been used in such a vaccine and, indeed, in such a placebo would in your view not have had the effect ascribed to it?
A The only things it might do is cause a local reaction, if that. Sorry, an allergic reaction.

Q An allergic reaction?
A Yes, a small quantity of anything may cause an allergic reaction.

C

Q I am going to turn to Dr Donegan's second report, so we are getting there, as it were and very little to ask you about this but can we go to page 77, please, and on page 77 Dr Donegan writes:

> "Measles, mumps and rubella have not virtually disappeared from countries with high MMR vaccine uptake."

D

You say in Sweden and Finland they have?
A Yes.

Q Then we spent a bit of time on this this morning:

> "The USA gave up its efforts to eradicate measles in 1968 five years after the vaccine was introduced due to diversion of federal funding. It started again in 1978 with a goal of eradication by 1982 and failed."

E

I think you were shown a document that came from Dr Donegan's third bundle which, in fact, we have not got but is that still available?

F

MR STERN: I think I gave Dr Elliman the copy. In fact, I gave him the only copy. I have another copy in the other room but I have got a copy here.

MR KARK: I have not seen it so it is my fault but is there any significance to that? We are trying to identify when, if ever, the USA gave up its effort to eradicate measles, well, if you say they did not really?

G

A It would be, and, I think, Mr Stern would also agree, unreasonable to ask me to read through what is about ten pages and comment on it.

MR STERN: Perhaps we can get a copy of it.

MR KARK: I wonder if we could get copies made?
A Dr Donegan has kindly pointed me to the appropriate section but I would caution that I am not going to make a comment on the overall message of the paper.

H

MR KARK: I think it is better frankly that we have it taken away and we get it copied when there is a natural break. A very short reference to your report, pages 47 and 52 in relation to your comments on, I think, it was on Dr Stewart's report. Page 52 is the easiest reference and as you can see you deal on that page with Professor Stewart's paper which Dr Donegan refers to at her page 83 and, in fact, at the bottom of page 51 of your report you say:

> "Dr Donegan confuses absolute numbers and proportions. Professor Stewart in his paper does not give absolute numbers and so when he talks about an increase in the proportion of admissions being infants it may well be this is a fall in absolute numbers, as of the overall total admissions", etcetera.

He was describing a study of admissions of children with whooping cough and you say that his report was criticised in court proceedings?
A Not that particular one, I think. It was other things that he had spoken about.

Q Do not worry about what other people have said but we want your expertise, as it were. Before we can rely on the Stewart report what are the cautions, as it were?
A The point I was making in this was that Professor Stewart talks about proportions and the following paper talks about absolute numbers. So they are not directly comparable. So, for example, I do not know, if the number of admissions had halved but if the numbers of admissions in young babies absolutely had stayed the same number then the proportion of admissions in young be babies would have gone up. So you cannot compare without having the full figures and giving just a statement that the proportion went down could give a misleading impression.

Q I think the Stewart paper appears at Dr Donegan's reference at tab 6. I think there were two reports on this topic that received some degree of criticism, as it were, Dr Stewart's and also Dr Ditchburn?
A That was referred to, I think, in one of the other expert's reports.

Q Let us concentrate on this and what store can be laid by it, if any. Headed: "Vaccination against whooping cough. Efficacy versus risks." Do you know this report?

A I do not know it in enormous detail because it is a very old one that has been superseded.

Q I think one of your criticisms in your report was that Dr Donegan should, if she was going to refer to this, have included the Malleson report?
A Yes.

Q Which, as we can see from Dr Donegan's bundle, is at the back of the Stewart report?
A Yes.

Q So it is started immediately as an article after the Stewart report?
A Yes, the beginning of the one was the end of the other on the same page.

Q Apart from the issue about absolute numbers, are you able to give us a thumbnail sketch of the problems as you would regard them with the Stewart report?
A I did not, at least I do not think I made any other detailed comments. I pointed out that you could not estimate how well the vaccine worked just by the numbers of children who were admitted who had been vaccinated but that was not a comment on Dr Donegan's report.

Q All right. Let me move on. Can we go to Dr Donegan's report page 95 and she was dealing with the change in the age of the administration of the pertussis vaccine?
A That is correct.

Q She wrote quoting from a report that, in fact, I think, had been produced by Dr Conway, Shields, et al, and this is half way down page 95:

> "The authors then go on to conclude that, '*no association between the occurrence of epilepsy and immunisation was observed*' and that, '*in the present study, 350 children had bacterial meningitis or aseptic meningoencephalitis. It is reassuring to find no association between pertussis immunisation and the occurrence of these neurological illnesses*.' This is not what might be deduced by looking at the graphs "

and the graphs, I think, are at tab 52 of Dr Donegan's?
A I think it is 52 of my bundle.

Q Sorry, yes. I just want you to help the Panel. I think it was the graphs that we find on page 804 that you were dealing with, with Mr Stern. Really my question is if you could assist the Panel, please, what is there in the graphs, if anything, that undermines the authors' conclusion because Dr Donegan seems to say, well, that is not what might be deduced from looking at the graphs? I just want your clear explanation of that?
A The graphs we are looking at were differences and you will see that for each graph there are two sets of lines, a dotted line and a solid line. What the authors were looking to do was to see if there was any difference between the two lines. As is the convention, and was at the time, you do not only put in the single point but how confident you are about that and crudely speaking if the bars, if the vertical lines with the horizontal lines at the top overlap it is thought that this is not a real difference. That it may well be due to chance. You can also put a statistical number to that and those are the P values that you see in the graphs and the---

Q The ones where you want to be below 0.5 to give it statistical relevance?
A That is right. All these, as you can see, in that set of graphs are well above .05 but there is one that we are all agreed on that is below 0.05 which is on the previous page and that relates to the febrile convulsions. That is in keeping with previous research. So they were able to pick up that difference.

Q Is febrile convulsion an exception, as it were to---
A To these series of graphs, yes.

A

Q Going back to Dr Donegan's comment:

> "The authors then go on to conclude that, '*no association between the occurrence of epilepsy and immunisation was observed*' and that, '*in the present study, 350 children had bacterial meningitis or aseptic meningoencephalitis. It is reassuring to find no association between pertussis immunisation and the occurrence of these neurological illnesses*.'"

B

Is there anything to undermine that statement in those graphs?
A To undermine the author's statement, no.

Q Finally this, Dr Donegan's reference 1.68 page 107 of her report. I think it is your report, page 58 She writes:

C

> "Dr Conway states that I have not given a full picture in my statement regarding cell-mediated immunity after measles disease cf measles vaccine. … Reading the study reveals that 40% cent of measles 'cases' have been vaccinated against measles and were described as '*clinical vaccine failures*'. '*A major measles epidemic occurred in October 1990 and June 1991 … measles vaccination coverage was high in the study area, therefore, a substantial proportion of the cases in the study received vaccine before protracting measles*'. Also in the 'control group' was vaccinated children '*<u>with no history of measles</u>*".

D

I think you told us that nevertheless this study concluded that the vaccine efficacy was 87 per cent?
A Yes.

E

Q Dr Donegan continues in her report:

> "At the three year follow up in 1994, fourteen (11.5%) of these children had contracted measles and so were excluded from the follow up. The substantial proportion of cases who had had measles preclude a conclusion that, '*reduced general cell mediated immunity may contribute to the higher long term mortality in children who have had measles compared with the recipients of the standard measles vaccine*' because 40% of children with measles had been vaccinated".

F

G

Earlier, and I think it was in relation to this, you told us that those who had been vaccinated were excluded from the research?
A Yes. This is in tab 85 of Dr Donegan's report.

Q I want to make sure that we all understand what you are saying. We have looked at the service, I want to try to avoid getting into too much detail again?
A Right at the bottom of page 7 of 15, or 80 at the bottom.

H

Q Page 80 at the bottom. "After adjustment"?
A Yes. If we go on, "Primary cases had an intermediate risk of anergy"'; that means the children who were the first ones in the household to get measles fell part way between those who were the second case in the household and those who did not have measles who were vaccinated in terms of their risk of getting what is being used as a marker for cell mediated immunity and that is the adjusted odds ratio. They then say:

> "But this did not change when six controls were excluded who had received the high dose E-Z vaccine and not the standard… Overall, 109 of the 270 case were clinical vaccine failures",

so these would have been children who were put in the measles group but had also been vaccinated. "When these children were excluded the odds ratio for all cases was unchanged", so they allowed for that 40 per cent who had been immunised and developed the disease and they took them out and the effect had not changed.

Q In your view, certainly on the basis of that report, if that is what was being relied on, the comment:

> "The substantial proportion of cases who had had measles preclude the conclusion of the author because 40 per cent of children with measles had been vaccinated";

that would not stand?
A The authors have allowed for that; it is buried in the article but it is there.

MR KARK: Subject to you reading that one piece of homework, as it were, that is all that I want to ask you at this stage.

THE CHAIRMAN: Mr Kark, are you happy for that to wait until the Panel has finished questions?

MR KARK: Yes, certainly. You are probably going to take a break now at some point in any event. I do not know if it will be preferable to give Dr Elliman the opportunity of reading that, it being distributed to the Panel and we can all have a look at it, albeit briefly, then we can come back if we want to crack on to it.

THE CHAIRMAN: Are you willing to carry on and take some questions and we can always have – I mean we have a...

THE WITNESS: It would seem a bit more logical to read the paper, answer the questions and then the Panel would be in a position to raise anything out of the paper.

THE CHAIRMAN: Certainly it will be neater that way…

MR KARK: (*Inaudible words – off microphone*)

THE CHAIRMAN: How much time do you think you might need? We normally take a

15-minute break?

THE WITNESS: That will be ample.

THE CHAIRMAN: We will come back at twenty-past three. *The Worldwide Measles Prevention* is D21.

(*The Panel adjourned for a short time*)

THE CHAIRMAN: Have you had a chance to read it?

THE WITNESS: I have indeed.

THE CHAIRMAN: Mr Kark, are you going to...

MR KARK: I am not going to re-examine on it. I do not know if you have had a chance now to read the article in full, as it were, and you want to...

THE WITNESS: Perhaps out of honesty and fairness I ought to as we have started the ball rolling. Dr Donegan's statement that the US gave up its efforts to eradicate measles in 1968 is mentioned in this article so it was a correct statement.

MR KARK: When you told us earlier that your understanding was that they had never…
A That is right, yes.

Q ..given up, does that now change your view?
A It does because the author is someone who has been intimately involved in the programme in the US and if he says that then I would have good reason to believe it. You might quibble over why that happened, there is different wordings, but as Dr Donegan's statement stands I think that is a reasonable reflection of what was in the article.

Q Just to remind ourselves, if we go back to page 77 of Dr Donegan's report, it is against paragraph B, the first line, "Measles, mumps and rubella have not actually disappeared from countries with high MMR vaccine uptake", that you do not agree with still?
A No. That still stands.

Q "The US gave up its efforts to eradicate measles in 1968, five years after the vaccine was introduced due to diversion of federal funding"; you now accept that must be right?
A That section down to but not including "indeed Dr Conway's study", my report stands and it was just my verbal evidence.

MR KARK: All right. Thank you very much.

<u>Questioned by THE PANEL</u>

DR GOODMAN: Good afternoon, Dr Elliman. I suppose I ought to declare two interests: one being an expert witness in court proceedings myself, from time to time; and also being involved at the moment in preparing reports as a GMC expert witness although I have not actually appeared before the GMC yet in this particular case…

THE CHAIRMAN: I see some puzzlement…

MR STERN: I was trying to hear, I could not hear.

DR GOODMAN: Sorry, I am declaring a couple of interests. One is that, not necessarily the case for all medical members, but I do engage in expert witness work myself. Secondly, that I am in the process of preparing a report for the GMC, like you were asked to do although I have not yet been questioned. I felt it was fair to declare those interests. I would like to come to two points regarding cause and effect, if you like, and they came from this morning's D documents. The first one is D19, "Information for Health Professionals", which as we see in the top-left in very small letters, "New Zealand Medicines and Medical Services". Have you got that?

A I have got D19, which is the "Causality Assessment of Suspected"…

Q That is right. "Causality Assessment of Suspected Adverse Medicine Reactions"?

A Yes.

Q The first paragraph after the summary of the headings:

> "Clinical judgment is involved in deciding whether or not a medicine is responsible for a particular adverse reaction".

Before we come to that, do you have any views about this document being used in this hearing today?

A I do not know in detail the New Zealand adverse reactions monitoring set up, but I would have thought it is not different in its principles from anything else and, therefore, in principle I cannot see an objection, no.

Q This sentence, "Clinical judgment is involved in deciding whether or not a medicine is responsible for a particular adverse reaction", would you agree with that statement?

A Yes, as long as I can elaborate on my answer.

Q Please?

A Supposing – well we do have an example that febrile convulsions have been proven to follow MMR vaccines, that is a generality. It is very difficult to say in a specific individual case whether or not a child who has the MMR vaccine, followed by a febrile convulsion, whether the two were related and that is the sort of thing that I imagine is being talked about here – clinical judgment – not the generality of whether febrile convulsions are related to MMR vaccines; that would be a trial scientific study thing but in the individual child it might be an issue of clinical judgment.

Q Over the page on the next page at the fourth paragraph down, "Definitions of

causality", where they say "CARM" – Centre for Adverse Reactions Monitoring; is that a New Zealand body or is that an international body, do you happen to know?
A I think it is New Zealand. I presume it is New Zealand.

Q So the New Zealand body developed criteria – they used criteria developed by WHO (World Health Organisation):

> "A 'probable' causal association is considered to be one where there is a reasonable time sequence, the event is unlikely to be attributable to concurrent disease or other medicines and a clinically reasonable response follows withdrawal".

Could you give us your views on that statement?
A I think that statement cannot be taken to apply in its entirety to vaccines because the issue of withdrawal does not really enter into it. I think that they are probably talking about something that you take as a course of medication, some suspected reaction occurs, you stop the medication and the reaction stops. Only on a population basis could that ever apply to a vaccine, which is usually a one or it maybe three instance, but they are separate instances in time so usually withdrawal does not apply to vaccinations.

Q The other point I would like to ask you about is the preceding D document (D18), "Vaccines for measles, mumps and rubella" by the Cochrane Collaboration. Could you (if you know this – and I should imagine you do) explain to the Panel, what the Cochrane Collaboration is and what is its philosophy, if you like?
A It is something that was set up to, as far as possible, provide an evidence base for any medical intervention. I am just trying to think hard. Obviously, my interest is vaccines. It certainly extends to drugs. I cannot honestly remember whether it extends to surgical procedures as well, but what it does is have a group of experts who gather together, as you have heard for this one, all the evidence, and that means looking through a search engine, so you search out for all the articles that might be related, you then look at all those articles, you check the references in those articles to make sure that there are no further ones, you would often go to people who you knew had done work in the field, so done research but may not have published their research; so, as far as possible, you get an overall picture of all the evidence that there is out there somewhere, and it is then analysed according to fairly set criteria, and it was spelt out in this one what they used, and they follow the hierarchy of evidence that I mentioned earlier, and they often will not consider evidence that does not come very high up that hierarchy. They will, as I say, not consider it; they will reject it. It is, on the whole, highly respected, and if the Cochrane collaboration comes up with a conclusion, if you like, the default is to accept it. That does not mean to say that one would not question it, and I and a number of other people would question their inclusion criteria in this particular report because we feel that it has left out a particular sort of research, except one instance of it, that has been used looking at vaccine side effects.

Q So you personally are not wholly in agreement with their approach, in your field?
A I think that their approach is sometimes too exclusive. They will throw out things that I and a number of my colleagues would have considered should be included in their analysis.

Q Do you feel that their inclusion is balanced and fair and so on?
A Apart from that one particular instance, yes.

Q Having given us your own views, Dr Elliman, are you able to tell us what the views are of other experts in the field in general, if they differ from yours or if they are similar to yours?
A There will be a spectrum of views. Some will certainly differ and they will say that the Cochrane is crudely the be all and end all. I know that there are a number of people who are involved in vaccine research, obviously the people whose research has been rejected if you like, who feel that this is not appropriate. The arguments are around statistical process and whether the particular methodology is sound enough to be included.

Q If you exclude those people whose research has been excluded and may have an axe to grind, but other experts ---
A There will be some others, yes.

Q Are there others who do not favour the Cochrane approach, experts whom you would consider reputable who do not favour the Cochrane approach?
A I can only answer for my field specifically, and there are ones around this particular methodology, called a self-controlled case series, who have not been directly involved in it, who would think it is appropriate to include it. They have included one of those, but there are others that they have not included.

DR GOODMAN: Thank you very much. Those are all my questions.

MR BROWN: Dr Elliman, it is really a point of clarification, and it bears on page 58 of Dr Donegan's report, which refers to the issue about the protective value against getting ovarian cancer. In your report you refer to the study in China, which is tab 36. The sentence that I would be grateful if you could clarify for me is the one in the introduction, which begins, "In contrast, risk increased significantly as serum mumps virus antibody titres increased". What actually does that sentence mean? Could you clarify that for me?
A What it meant was, as you remember, there were two parts to their studies. Mr Stern pointed out that there was the clinical one, but they also took blood samples to see if from the blood samples there was evidence of past mumps infection, and they did not only say "yes" or "no", there was evidence, but how high were the antibody levels; and what they are saying here is that the risk of ovarian cancer seemed to increase as the level of antibodies increased. Now please do not ask me to interpret that, because I cannot, but that is their statement.

Q I think my next question would be: could these persons the subject of this research have received the mumps vaccine?
A This is dated 1992. We did not introduce mumps vaccine as a general thing until 1988. Bearing in mind that these were adults at the time of the study in 1992, I cannot put my hand on my heart and say "no", but it is extraordinarily unlikely. In fact, no, I can say "no, definitely not". There would not have been a mumps vaccine licence then.

MR BROWN: That is helpful. Thank you very much.

THE CHAIRMAN: It appears that there are no further questions for you, Dr Elliman. Are there any points arising?

Further cross-examined by MR STERN

Q There is just one point, if I may, because it just relates to the paper of Orenstein that you have just looked at and helpfully given your view on. I think you have a copy of it, madam. I just want to ask you to have a look at it, D21. I think it is right, is it not, that EZ is this high titre vaccine?
A Not necessarily. It is a strain. The high titre would depend on how much is in the vaccine.

Q It is page 26, the bottom right-hand corner.

THE CHAIRMAN: Anything else?

MR STERN: I am just in the middle of this point.

THE CHAIRMAN: I beg your pardon.

MR STERN: That is all right. I will not be long.
Q Page 26, Dr Elliman, on the right-hand side:

> "In a randomised control trial in Mexico City, seroconversion rates as high as 94% were achieved 8 weeks following vaccination of 6-month old infants with high titer EZ vaccine…"

I forget your exact words, but I thought you said that they did not use that in the west anywhere?
A I cannot remember whether I said "west" or "industrialised countries" or "Europe". My intention was industrialised countries, whether west, east or whatever.

Q Mexico?
A Borderline.

Q I am not from Mexico, so I do not hold it against you. Also, I think it is also used in the United States, is it not?
A High titre?

Q Yes.
A Not that I am aware of. I would be amazed if it was.

Q I may be able to amaze you. Let me just do that before we finish. On the other hand, I may not. Just give me one moment. You will appreciate that this is something that has only just emerged, so I need to deal with it. (*Short pause*) Just look at *this* document, please? It is BMJ News Headlines. (*Same handed to the witness*) It is the bottom part that has been marked, about parents getting an apology. I do not know whether it is the same EZ that we are talking about or not?
A We are talking about two separate things. One is that there is a strain of vaccine

called EZ vaccine. The other is the titre of that vaccine, the amount in the vaccine. This refers to ---

Q Is it used?
A Yes, EZ vaccine is used.

MR STERN: Thank you. Let me have it back, please. (*Same handed to Mr Stern*) That is it, thank you.

THE CHAIRMAN: I just want to clarify, Mr Kark, what is the status of the Kroll and Conway reports. Clearly they are not being called.

MR KARK: They are there purely to put into context Dr Donegan's second report. There were discussions prior to this hearing about what ought to go in and counsel between them agreed that in order to make sense of it, you would need those other reports, but so far as evidence is concerned, in other words what you can rely on in terms of Dr Donegan's own reports, you of course can form your own conclusion as to whether the charges are proved on the basis of her reports and also you have Dr Elliman's evidence, but you ought not to treat, in my submission, particularly Dr Conway as it were as a second expert, who has not given evidence before you and has not been cross-examined before you. I hope that helps.

THE CHAIRMAN: Mr Stern, any observations?

MR STERN: I may have a number of observations, but at the moment not.

THE CHAIRMAN: Can we now release Dr Elliman?

MR KARK: Yes, indeed we can.

THE CHAIRMAN: You have a point, Dr Elliman?

THE WITNESS: Yes. I was quite rightly picked up on putting an inaccurate immunization schedule in the documents. In fact, nowhere did I use that inaccurate schedule behind any of the discussion or the logic in the document itself.

MR STERN: I rather assumed that.

THE CHAIRMAN: Thank you. Dr Elliman, that concludes your evidence to this Panel. You are released from the witness box. It is up to Mr Kark whether you are to be used again.

MR KARK: Dr Elliman will continue to assist me, I hope, for as much time as I need him, but thank you very much indeed, Dr Elliman.

THE WITNESS: Is anybody going to use *this* in the near future (*indicating file*)? It is in a mess and there are lots of my documents in it as well.

MR KARK: We will sort it out in a moment, Dr Elliman, but please take with you any

documents that you need.

Madam, can I just deal with the plan now? That is the last witness that the GMC proposes to call. However, we have agreed that you can receive further material. The further material is the transcript of Dr Donegan's evidence before Mr Justice Sumner. That would in any event have formed the basis of a fair amount of cross-examination, I expect, and I think that both Mr Stern and I have agreed that it would be helpful for you to have it at this stage. Indeed, you could start, as it were, reading that, if you wanted to, in advance of hearing from Dr Donegan, who I expect will be giving evidence and will be the next witness. I think that Mr Stern has now had an opportunity of looking at the copy that we are going to use.

MR STERN: Yes. Somewhat helpfully, just before I came back from holiday, the page numbers were redone. I will therefore be referring you to the internal page numbers, because I am not going to re-mark my copy again; that would not be a good use of time. If you make notes, I personally would be grateful if you would use the internal pagination rather than the pagination on the right-hand side. That is all I mention at this stage, because obviously there may be things to be referred to and, as I say, my markings are on there, but they have been completely repaginated, unfortunately.

MR KARK: I agree with that. I am also going to be using the pagination that… Perhaps we can hand them out to you and you can see what we are talking about.

THE CHAIRMAN: That will become C7.

MR KARK: What I suggest is that there should be room still in your Dr Donegan file, so if the reports can now go back into the file just in terms of paper management, just so that we know where everything is, and there will be room within C1, and there is going to be a tab at the beginning of this section, tab F. I think you should have tab E as Dr Donegan's references just for the sake of completeness, and then tab F, as it is coming to you, will be the beginning of Dr Donegan's evidence in the High Court. Could I ask for those to be handed out now? (*Same handed*) Could I suggest that they go in the back of file C1 and have their own tab F?

THE CHAIRMAN: We will take the C7 number off.

MR KARK: As I say, I think Mr Stern indicated last week that he would certainly prefer not to call Dr Donegan this afternoon and then have a day's gap, and I would certainly support that. That would not seem to be sensible or indeed perhaps fair. It may be, therefore, that the time could usefully be spent reading as far as you want to into these transcripts.

MR STERN: Have you closed your case?

MR KARK: I can formally close the GMC's case.

THE CHAIRMAN: Any observations, Mr Stern?

MR STERN: No, madam. As my learned friend has closed his case, I would in any

event have asked not to start Dr Donegan's evidence this evening, because obviously that would be unfair. As I understand it, the position still stands for tomorrow for the whole day.

THE CHAIRMAN: Indeed.

MR STERN: For the whole day?

THE CHAIRMAN: Yes, for the whole day.

MR STERN: Obviously, we will be here on Wednesday morning.

DR GOODMAN: Are we reading *this* between now and then?

MR STERN: Yes. Strictly speaking, the position is that it may have been more appropriate legally, if you like, during the course of Dr Donegan's evidence, and I see the learned Legal Assessor nodding, but what we do not want to do is to find that during the course of Dr Donegan's evidence we have to break off for people to read it. Bearing in mind that we have the day free tomorrow, it seems sensible that you have it now and that we ruin your day by asking you to look at it, rather than you thinking you are going to have a free day, or at least a partially free day.

THE CHAIRMAN: We will resume at 9.30 on Wednesday.

(*The Panel adjourned until 9.30 a.m. on Wednesday, 15 August 2007*)