Neutral Citation Number: [2020] EWHC 3102 (QB)

Case No: HQ17C04508
QB/2017/002909

IN THE HIGH COURT OF JUSTICE
QUEEN'S BENCH DIVISION

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 23/11/2020

Before:

MR JUSTICE STEWART

- -

Between:

XM	**Claimant**
BY HIS FATHER AND LITIGATION FRIEND FM	
- and -	
LEICESTERSHIRE PARTNERSHIP NHS TRUST	**Defendant**

- -
- -

Miss Katie Gollop QC (instructed by **Express Solicitors Ltd**) for the **Claimant**
Mr James Todd QC (instructed by **Weightmans LLP**) for the **Defendant**

Hearing dates: 25th, 26th, 27th, 28th November 2019.
19th, 20th, 21st, 22nd and 27th October 2020; 23rd November 2020

- -

Approved Judgment

I direct that no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic.

Mr Justice Stewart:

Introduction

1. The Claimant was born on 27th June 2012. The Defendant provided health visitor services in the Loughborough area where the Claimant lived. In its very briefest outline, the Claimant says that he sustained catastrophic permanent brain injury as a result of the Defendant's servants or agents failing to identify and act upon the fact that his head was growing at an abnormally fast rate. The Claimant had a very rare and benign brain tumour, a choroid plexus papilloma, from birth until he was treated in January 2013. The tumour caused overproduction of cerebrospinal fluid (CSF) which accumulated in the ventricles of his brain causing the Claimant's head to grow abnormally fast. Because of elasticity in a baby's skull, the Claimant was able to compensate for the rapid increase in the size of his head. In late December 2012 raised intracranial pressure began to cause symptoms. His parents took him to an emergency walk-in centre on 30th December 2012. He had massive hydrocephalus. On 3rd January 2013 CSF was drained and the tumour successfully removed. However, it was too late to prevent injury and he sustained permanent catastrophic brain damage.

The allegations in outline

2. Whilst the Claimant was in utero his head circumference was recorded on 17th May 2012 as being below the 5th centile and on 1st June 2012 as a little above the 5th centile (288.6 mm and 312.3 mm respectively). No measurement was taken of the head circumference at birth. The Claimant's weight was recorded at birth as 3.12 kgs, i.e. between 25th and 50th centile. On 29th June 2012, at GP registration and examination, the head circumference and weight were not recorded.

3. The Claimant's parents were provided with a red book on the Claimant's return home. The red book contains a number of graphs including a graph for a boy's head circumference. It is pre-printed with centile markings.

4. On 10th July 2012 (aged 13 days) Mrs Ann Furmage, a health visitor, saw the Claimant at home. She recorded his head circumference as 35.2cms. The Claimant's weight was recorded as 3.14 kgs, which she noted was "good gain, just above birth weight". The Claimant suggested that his weight was below the 15th centile[1]. According to the graph the Claimant's head circumference was on the 25th centile.

5. On 24th July 2012 the Claimant was seen at home by Sharon Zanotti, now Mrs Makwana. I shall refer to her as Mrs Makwana. Mrs Makwana was a nursery nurse required to perform certain health visitor functions. She did not record the Claimant's head circumference. She recorded his weight as 3.7 kgs and noted "very good gain, up through 25th centile.[2]"

[1] The Defendant denied (RAD para 13) that at 13 days it is correct, material or helpful to describe the Claimant as being on any particular centile line, there being no lines on the chart between 0-2 weeks because weight gain in the early days varies a lot from baby to baby.

[2] The Claimant pleaded (RAPC para 16A) that in fact the Claimant's weight remained around the 15th centile). The Defendant (RAD para 14) pleaded that the weight was plotted at 3.7kg, just above the 25th centile; there is no 15th centile marked. If plotted to the exact day the Claimant's weight would have been above the 9th centile and below the 25th centile, but the difference between that and what was recorded was slight and immaterial.

6. On 8th August 2012 when the Claimant was exactly 6 weeks old, he was seen again by Mrs Furmage. She measured his head and recorded the measurement as head circumference of 38.3cms. She noted "steady gain". The head circumference was by now on or just over the 50th centile. She recorded his weight as 4.24 kgs and again wrote "steady gain". His weight at this stage was approximately on the same centile as before.

7. On or about 22nd August 2012, the Claimant missed his 6-8 week GP appointment.

8. On 8th October 2012 Mrs Makwana saw the Claimant at home again. She did not measure his head circumference. His weight was recorded as 5.72 kgs which she noted was "consistent growth, good constant gain". The weight remained on the same centile as before.

9. On 15th October 2012 the Claimant was seen by Sharon Kirkpatrick, a health visitor. This was to perform a Health Visiting Assessment four-month check. The Claimant's head circumference was not measured. His weight was 6 kgs, i.e. on the same centile.

10. On 13th November 2012 Jacqueline Hewitt, a nursery nurse, visited the Claimant at home. She did not measure the head circumference. The Claimant's weight was 6.74 kgs. She noted this as "progressive". The weight was now just below the 25th centile.

11. On 11th December 2012 and 19th December 2012, the Claimant saw the GP with eczema and a cough on the respective dates. His head circumference and weight were not measured.

12. On 30th December 2012 the Claimant went to the emergency walk-in centre. His head circumference was 51cms. The following day he was transferred to Queen's Medical Centre with massive hydrocephalus. His head circumference was 52.2cms, i.e. the 99.6th centile on 30th December 2012, with an estimated weight of 7 kgs, i.e. the 25th centile.

13. The Claimant underwent an operation on 1st January 2013 and another on 3rd January 2013.

The particulars of negligence

14. The particulars of negligence are set out in paragraph 43 of the Re-Amended Particulars of Claim (RAPC)[3]. In summary they are:

    i) On 8th August 2012 Mrs Furmage failed to detect, identify or heed the fact that the head circumference had crossed a centile line and had increased from being on the 25th centile to being over the 50th centile. She wrongly concluded that the rate of head growth was "steady gain"; she failed to note the discrepancy

[3] The amended particulars of claim were re-amended after 4 days of trial – see below.

between the weight gain which was below the 15th centile and correctly described as "steady", and the increase in the head circumference which was on or just over the 50th centile. It is said that Mrs Furmage should have either:

a) referred the Claimant to a GP or Paediatrician (depending on local referral pathways) for assessment of the abnormal rate of head growth and exclusion of any potential damaging cause such as hydrocephalus; or

b) monitored the pattern and rate of growth of the head circumference and arranged for a further measurement to be obtained one or two weeks later.

Further it is said that she failed to mention the contrast between the steady weight and the increase in head circumference to the Claimant's parents, and to tell them that this needed to be monitored; she failed to make a note in the hand written and computer records on the Claimant, and also failed to contact the GP to ask him to monitor the Claimant when he was next seen.

ii) From the age of 8 weeks and particularly on 8th October 2012, 16th October 2012 and 13th November 2012, the health professionals did not (a) identify the fact that the Claimant had not seen a GP for the GP part of the 6-8 week check, and (b) rectify that omission by arranging for him to see his GP, or advising his parents that he needed to be seen by the GP. Further, they should have arranged for the Claimant to see his GP because of the increase in his head circumference between 10th July 2012 and 8th August 2012, and the disparity between the rate of increase in head circumference and the rate of increase in weight.

iii) The Defendant's servants or agents failed to refer the Claimant to hospital at any time between 8th August 2012 and 30th December 2012.

15. After 4 days of hearing in November 2019, the trial adjourned part heard after the court had heard from the Claimant's parents and the 4 members of the Defendant's staff referred to above. The main reason for the adjournment was so that the Claimant could re-amend the Particulars of Claim according to paragraph 2 of the Order sealed on 2 December 2019 which recorded: "The Claimant do be permitted to amend to plead an allegation in relation to negligent failure to observe a disproportionately large head on or after 8 October 2012[4]. The amendment alleged the following head circumferences:

- 8th October 2012 – Between centiles 98 and 99.6
- 15th October 2012[5] – Centile 99.6
- 13th November 2012 – Very significantly over centile 99.6

The Claimant alleged that the Defendant failed, on visual examination of him particularly when unclothed, to identify that he had an unusually large head and/or that his head and body were not in proportion. The way the matter arose at a very late stage

[4] The Claimant sought to plead further amendments. Some were not objected to. Others were refused after a hearing on 31 March 20.
[5] In fact pleaded as 16th October 2012.

was that Sharon Kirkpatrick's (undated) statement had been served only shortly before trial. At [19] she said: "It would have been inconceivable that I would not have noticed an extremely large head above the 90th centile". She and the other witnesses were asked about this and re-affirmed it orally. Further details are given later in this judgment.

16. The Defendant's pleaded response in the Re-Amended Defence (RAD) was that it did not accept these figures, that the head circumference at these dates is unknown and that there is a range of possibilities, supported by the Defendant's neurological expert, including that the head circumference was below the 91st centile on the first two dates and below the 99.6th centile on 13 November 2012.

17. The re-amendments therefore require the court to determine further issues, as detailed later in this judgment.

18. The Defendant admitted[6] that had the Claimant's head circumference been measured again at a time several weeks after 8 August 2012, it would have been seen to have crossed two centile lines and the Claimant's hydrocephalus would have been diagnosed and successfully treated.

Witnesses

19. The non-expert witnesses from whom I heard were:

    i) FM, the Claimant's father. His witness statement is dated 11th February 2019.

    ii) MM, the Claimant's mother. Her witness statement is dated 9th February 2019.

    iii) Mrs Ann Furmage. Her witness statement is dated 21st February 2019.

    iv) Mrs Jacqueline Hewitt. Her witness statement is dated 30th January 2019.

    v) Mrs Sharon Makwana. Her witness statement is dated 23rd January 2019.

    vi) Mrs Sharon Kirkpatrick. Her undated witness statement was signed in November 2019.

20. There was also a witness summary from Mrs Kirkpatrick.

21. The Paediatric Neurosurgeons instructed are: (i) Professor Mallucci whose report is dated April 2019. He reported on behalf of the Claimant; (ii) Professor Richard Hayward whose report is dated May 2019. He reported on behalf of the Defendant.

22. There are two joint reports from Professors Mallucci and Hayward. These are both dated 13th September 2019.

23. Each neurosurgeon produced a further report after the adjournment of the trial part heard. Professor Mallucci's was dated May 2020 and Professor Hayward's March 2020. There was a further joint statement dated 14th September 2020.

[6] RAD para 31.

24. The other expert evidence was from:

    i) Mrs Irene Walters. She is a registered nurse and health visitor. Her report is dated April 2019. She reported for the Claimant. Her supplemental report is dated 25th June 2020.

    ii) Ms Sally Gooch. She is a registered nurse and health visitor. Her report is dated 24th May 2019. She reported for the Defendant. Her supplemental report is dated 24th June 2020.

    iii) Doctor Alistair Bint. He is a general practitioner. His report is dated May 2019. He reported for the Claimant. His supplemental report is dated 28th May 2020.

    iv) Doctor Paul Bracey. He is a general practitioner. His report is dated May 2019. He reported for the Defendant. His supplemental report is dated June 2020.

25. The joint reports from these experts are as follows:

    i) Nurses/health visitors: This is dated 19th September 2019. The supplemental joint report is dated 17th September 2020.

    ii) GP experts: This is dated 24th September 2019. The supplemental joint report is dated 10th September 2020.

The issues in the case

26. The issues in outline are:

    i) Should a healthcare professional acting reasonably have considered that the growth of the Claimant's head from the 25th centile at age 2 weeks to the 50th centile at age 6 weeks as being normal?

    ii) Was there a duty to consider head circumference growth alongside weight?

    iii) Did the Defendant owe the Claimant a duty to re-measure his head circumference (or ensure that it was re-measured) or to refer him for medical opinion for assessment of potentially abnormal head growth rate, on/after 8th August 2012?

    iv) Did the Defendant owe the Claimant a duty of care at appointments after 8th August 2012 to:

        a) consider the previous growth chart and note the increase in size between 2 and 6 weeks, compare that increase in size with weight and re-measure his head and/or

        b) ensure that the Claimant was seen by a medical practitioner.

    v) Did the Defendant owe a duty of care to the Claimant after age 8 weeks to realise that he had not undergone a medical assessment at age 6-8 weeks, in accordance with the Defendant's policy, and to explain to his parents why it was important

that this took place and to take steps to ensure that the Claimant was examined by a medical practitioner.

(Post adjournment)

vi) On the balance of probabilities what was the Claimant's head circumference on 8th and 15th October 2012 and on 13th November 2012; if abnormally large, was there a breach of duty by the Defendant's employees in failing to determine on those dates that the Claimant's head was abnormally large and/or that there was disproportion between his head and his body.

Legal framework

27. It is admitted by the Defendant that it owed a duty of care and that it was vicariously liable for the acts and omissions of its Health Visitors and Nursery Nurses, the latter performing some health visitor functions. In that context I set out briefly the principles to be adopted.

28. In *Bolam v Friern Hospital Management Committee* [1957] 1WLR 582 McNair J set out the classic test as follows:

> "…he is not guilty of negligence if he has acted in accordance with a practice accepted as proper by a responsible body of medical men skilled in that particular art……Putting it the other way round, a man is not negligent, if he is acting in accordance with such a practice, merely because there is a body of opinion who would take a contrary view."

29. In *Maynard v West Midlands RHA* [1984] 1WLR 634 Lord Scarman said:

> "Differences of opinion and practice exist, and will always exist, in the medical as in other professions. There is seldom any one answer exclusive of all others to problems of professional judgment. A court may prefer one body of opinion to the other: but that is no basis for a conclusion of negligence."

30. In *Bolitho v City and Hackney Health Authority* [1998] AC 232: Lord Browne-Wilkinson explained and refined the *Bolam* test in this way:

> "……the court is not bound to hold that a Defendant doctor escapes liability for negligent treatment or diagnosis just because he leads evidence from a number of medical experts who are genuinely of opinion that the Defendant's treatment or diagnosis accorded with sound medical practice……The use of these adjectives - responsible, reasonable and respectable - all show that the court has to be satisfied that the exponents of the body of opinion relied upon can demonstrate that such opinion has a logical basis.

> … if, in a rare case, it can be demonstrated that the professional opinion is not capable of withstanding logical analysis, the judge is entitled to hold that the body of opinion is not reasonable or responsible."

31. In *C v North Cumbria University Hospitals NHS Trust* [2014] EWHC 61 Green J, as he then was, gave a helpful analysis of the case law on breach of duty. He said:

> "25. … It seems to me that in the light of the case law the following principles and considerations apply to the assessment of such expert evidence in a case such as the present:
>
> i) Where a body of appropriate expert opinion considers that an act or omission alleged to be negligent is reasonable a Court will attach substantial weight to that opinion.
>
> ii) This is so even if there is another body of appropriate opinion which condemns the same act or omission as negligent.
>
> iii) The Court in making this assessment must not however delegate the task of deciding the issue to the expert. It is ultimately an issue that the Court, taking account of that expert evidence, must decide for itself.
>
> iv) In making an assessment of whether to accept an expert's opinion the Court should take account of a variety of factors including (but not limited to): whether the evidence is tendered in good faith; whether the expert is "responsible", "competent" and/or "respectable"; and whether the opinion is reasonable and logical.
>
> v) Good faith: A *sine qua non* for treating an expert's opinion as valid and relevant is that it is tendered in good faith. However, the mere fact that one or more expert opinions are tendered in good faith is not *per se* sufficient for a conclusion that a Defendant's conduct, endorsed by expert opinion tendered in good faith, necessarily accords with sound medical practice.
>
> vi) Responsible/competent/respectable: In *Bolitho* Lord Brown Wilkinson cited each of these three adjectives as relevant to the exercise of assessment of an expert opinion. The judge appeared to treat these as relevant to whether the opinion was "logical". It seems to me that whilst they may be relevant to whether an opinion is "logical" they may not be determinative of that issue. A highly responsible and competent expert of the highest degree of respectability may, nonetheless, proffer a conclusion that a Court does not accept, ultimately, as "logical". Nonetheless these are material considerations….The following are illustrations…."Competence" is a matter which flows from qualifications and experience. In the context of allegations of clinical negligence in an NHS setting particular weight may be

> accorded to an expert with a lengthy experience in the NHS This does not mean to say that an expert with a lesser level of NHS experience necessarily lacks the same degree of competence; but I do accept that lengthy experience within the NHS is a matter of significance. By the same token an expert who retired 10 years ago and whose retirement is spent expressing expert opinions may turn out to be far removed from the fray and much more likely to form an opinion divorced from current practical reality A "responsible" expert is one who does not adapt an extreme position, who will make the necessary concessions and who adheres to the spirit as well as the words of his professional declaration (see CPR35 and the PD and Protocol).
>
> vii) Logic/reasonableness: By far and away the most important consideration is the logic of the expert opinion tendered. A Judge should not simply accept an expert opinion; it should be tested both against the other evidence tendered during the course of a trial, and, against its internal consistency….. the task of the Court is to see beyond stylistic blemishes and to concentrate upon the pith and substance of the expert opinion and to then evaluate its content against the evidence as a whole and thereby to assess its logic. If on analysis of the report as a whole the opinion conveyed is from a person of real experience, exhibiting competence and respectability, and it is consistent with the surrounding evidence, and of course internally logical, this is an opinion which a judge should attach considerable weight to."

32. As to subparagraph (vii) above, it is correct that the critical test of logic is that set out in *Bolitho*. The factors referred to by Green J may well be of assistance in deciding whether an opinion is logical. I do not read him as saying that the mere fact of (e.g.) some internal inconsistency in an expert's evidence means that the opinion must be regarded as illogical.

33. In *Williams v Cwm Taf Health Board* [2018] EWCA Civ 1745, Underhill LJ said:

> "14. First, it would not, in all ordinary circumstances, be appropriate for a judge to hold that a particular clinical decision had no logical basis or was unreasonable without the support of expert evidence. The burden of proving that an impugned decision, supported by a responsible body of medical opinion, was nevertheless unreasonable is self-evidently a heavy one, as Lord Browne-Wilkinson himself emphasised in *Bolitho* - see page 243D. A judge would normally only find that the burden had been shifted on the basis of expert evidence exposing the illogicality in question….I am prepared to concede that in principle it is open to a judge, if any facts in the case which depend on specialist expertise are sufficiently clearly established and are uncontroversial, to use his or her own judgment and reasoning to say that the evidence before him about the reasonableness of a clinical decision simply does not make sense. That is, it goes without saying, an exercise to be undertaken with the utmost caution in a specialist field but, as I say, I am prepared to accept it is not inappropriate in principle."

34. The parties did not take me to any case specifically on the standard of care of health visitors/nursery nurses. In this context:

- Mr Todd QC cited this passage from *Clerk & Lindsell* 23rd edn. at 9-98:

  "…Liability of other medical and quasi-medical professionals

  Nursing staff, as well as medical practitioners, owe a duty of care to the patients in their care, though there are few decided cases on the matter. Nevertheless, the principle relating to the liability of doctors applies equally to nurses. The nurse must thus attain the standard of competence and skill to be expected from a person holding their post. The more skilled the job undertaken by the nurse, the higher the standard of care expected."

- Miss Gollop QC cited passages from two authorities:

  In *Wilsher v Essex AHA [1987] QB 730 @ 751,* Mustill LJ said:

  "For my part, I prefer the third of the propositions which have been canvassed. This relates the duty of care not to the individual, but to the post which he occupies. I would differentiate "post" from "rank" or "status." In a case such as the present, the standard is not just that of the averagely competent and well-informed junior houseman (or whatever the position of the doctor) but of such a person who fills a post in a unit offering a highly specialised service. But, even so, it must be recognised that different posts make different demands. If it is borne in mind that the structure of hospital medicine envisages that the lower ranks will be occupied by those of whom it would be wrong to expect too much, the risk of abuse by litigious patients can be mitigated, if not entirely eliminated"

  In *Darnley v Croydon Health Services NHS Trust* [2019] AC 831; [2018] UKSC 50, Baroness Hale said:

  "25. The particular role performed by the individual concerned will be likely to have an important bearing on the question of breach of the duty of care. As Mustill LJ explained in ***Wilsher v Essex Area Health Authority [1987] QB 730*** **,** 750–751, the legitimate expectation of the patient is that he will receive from each person concerned with his care a degree of skill appropriate to the task which he or she undertakes. A receptionist in an A & E department cannot, of course, be expected to give medical advice or information but he or she can be expected to take reasonable care not to provide misleading advice as to the availability of medical assistance. The standard required is that of an averagely competent and well-informed person performing the function of a receptionist at a department providing emergency medical care."

The Department of Health Healthy Child Programme (October 2009) ("The HCP")

35. There has been a National Service Framework for children since 2004, part of this being the Child Health Promotion Programme. In October 2009 a new Department of Health Programme was introduced called the Healthy Child Programme (HCP). It incorporated WHO growth charts for infants from birth to four years of age. On the Government website the HCP is described as "a universal preventative service, providing families with a programme of screening, immunisation, health and development reviews, supplemented by advice around health, wellbeing and parenting." The HCP and the programme which it superseded provided for universal assessments, measurements and immunisations and general monitoring of every child, with a medical examination for every child aged 6-8 weeks.

36. Some relevant extracts from the HCP[7] are:

i) (page 12-13)

"**An emphasis on integrated services**

…

• To be led by a health visitor and delivered by a range of practitioners across the health service and the wider children's workforce.

…

The responsibility for delivering the HCP in the first years of life should lie with health professionals – in particular health visitors – for the following reasons:

…

• Health visitors have the necessary skills to co-ordinate the HCP."

• (pages 18-19)

"Health and development reviews

The core purpose of health and development reviews is to:

…

• assess growth and development; and

• detect abnormalities.

• Universal health and development reviews are a key feature of the HCP…

[7] In the extracts from the HCP and the two subsequent documents, namely the WHO document and the SOP, certain parts of the extracts have been underlined. This is my underlining.

The following are the most appropriate opportunities for screening tests and developmental surveillance, for assessing growth, for discussing social and emotional development with parents and children, and for linking children to early years services:

• by the 12th week of pregnancy;

• the neonatal examination;

• the new baby review (around 14 days old);

• the baby's six to eight-week examination …

…

One of the HCP's core functions is to recognise disability and developmental delay.

…

Growth is an important indicator of a child's health and wellbeing…

Regular monitoring of growth continues to be reviewed as new evidence emerges and concerns regarding obesity increase. Measuring and assessing the growth of young children is a particularly skilled task, and needs to be carried out by appropriately trained practitioners...

Competent physical examinations should be undertaken for all newborn infants and at six to eight weeks, and thereafter whenever there is concern about a child's health or wellbeing."

ii) (page 23)

"Screening

…

Screening is an integral part of the universal HCP… Data and information systems should be capable of supporting the pathway, delivering a fail-safe service and performance management of the screening programme…"

iii) (pages 66-67 and 72)

"Annex B: Core elements of the HCP workforce

Introduction

… This annex has been included to assist commissioners and local managers to ensure that they have the workforce needed to deliver the HCP standard described in this guide.

The HCP workforce

Delivery of the programme relies on a team approach that includes Sure Start children's centre staff and members of the primary healthcare team. An effective, competent and confident workforce, capable of delivering the HCP during pregnancy and the first years of life, will have the following characteristics:

• multi-skilled teamworking involving a range of practitioners across general practice, maternity services and children's centre services;

• an agreed and defined lead role for the health visitor;

…

Multi-skilled teamworking

Delivering the HCP relies on the contribution of a broad spectrum of practitioners, including GPs, practice nurses, midwives, health visitors, community nursery nurses, early years practitioners, family support workers and other practitioners employed by Sure Start children's centres or working for voluntary organisations.

…

The key to success is a shared understanding – both by parents and by all the practitioners involved – of the roles, responsibilities and potential contribution of the different practitioners and organisations.

…

An agreed and defined lead role for the health visitor.

The HCP is a clinical and public health programme led by, and dependent on, health professionals. Effective leadership is required to ensure that the various practitioners contributing to the HCP communicate with one another and provide a holistic, co-ordinated service tailored to local needs.

It is recommended that responsibility for co-ordinating the HCP to a defined population at children's centre and general practice level should rest with the health visitor… They will need to work across general practice and children's centres, working closely

> with maternity services and other agencies concerned with children and families.
>
> This role is hands-on, working with children and families, overseeing and delivering the HCP to a defined and registered population, involving local parents, co-ordinating and supporting the contribution of the team, quality-assuring the service and monitoring the outcomes and delivery of the programme.
>
> …
>
> A pilot project is currently working with 10 sites to test this role and explore the training and support needs of health visitors to lead the HCP.
>
> **Effective teamworking for the HCP**
>
> • Clear information for families about the roles and responsibilities of each practitioner with whom they come into contact should be provided…"

Department of Health document November 2009. ('The WHO document'.)

37. This document is headed "Using the new UK-World Health Organisation 0-4 years growth charts. Information for healthcare professionals about the use and interpretation of growth charts."

38. The WHO document contains information mostly about weight and height. However, it has important guidance about the use of growth charts, plotting and interpreting measurements and other information.

39. Some relevant extracts are:

"when to weigh and measure length

- Babies should be weighed in the first week as part of the assessment of feeding and thereafter as needed
- Length or height should be measured whenever there are any worries about a child's weight gain, growth or general health
- If parents wish, or if there is professional concern, babies can be weighed at 6-8 weeks, 12 and 16 weeks…

When to measure head circumference

Head circumference should be measured around birth, at the 6-8 week check and at any time after that if there are any worries about the child's head growth or development …

Assessing weight loss after birth

Some degree of weight loss is common in the first week but 80% of infants will have regained this by 2 weeks of age. Recovery of birth weight by 2 weeks suggests that feeding is effective and that the child is well …

What do the centiles mean?

- The new charts indicate a child's size compared with children of the same age and maturity who have shown optimum growth. The chart also shows how quickly a child is growing.
- The centile lines on the chart show the expected range of weights and heights (or lengths); each describes the number of children expected to be below that line e.g. 50% below the fiftieth, 91% below the ninety-first.
- Children come in all shapes and sizes, but 99 out of 100 children who are growing optimally will be between the two outer lines (0.4th and 99.6th centiles); half will lie between the 25th and 75th centile lines.

- Being very small or very big can sometimes be associated with underlying illness. There is no single threshold below which a child's weight or height is definitely abnormal but only 4 out of 1000 children who are growing optimally are below the 0.4th centile, so these children should be assessed to exclude any problems. Those above the 99.6th centile for height are all almost always healthy stock. If weight is above the 99.6th centile, calculate body mass index (BMI)… also calculate the BMI for the weight and height centiles appear very different.

What is a normal rate of weight gain and growth?

- Babies do not all grow at the same rate, so a baby's weight often does not follow a particular centile line, especially in the first year. Weight is most likely to track within one centile space (the gap between two centile lines – see the diagram on page 10) …

- Head circumference centiles usually track within a range of one centile space. After the first few weeks a drop or rise through two or more centile spaces is unusual (fewer than 1% of infants) and should be carefully assessed…"

40. The reference to the diagram on page 10 is a diagram headed "centile terminology." At the relevant part of the text is:

> "if the point is within ¼ of a space of the line they are on the centile, e.g. 91st
>
> If not they should be described as being between the two centiles: e.g. 75th-92nd
>
> A centile space is the distance between two of the centile lines, or equivalent distance if midway between centiles…"

The Defendant's Standard Operating Procedure ('SOP')

41. The SOP of March 2011 was the one in force in 2012. Its full title is "Standard Operating Procedure for Family Health Visiting Healthy Child Programme version 4 Within the County Business Unit."

42. Following sections of the SOP are relevant:

(Pages 4-5):

"1. Purpose

…

The Guidelines will support the delivery of the Current Core Health Visiting Programme and the revised responsibilities reflected in the Healthy Child Programme (DOH 2009 HCP) …

2. Introduction

The Healthy Child Programme offers every family a programme of screening assessments, the opportunity to receive the national immunisation programme, developmental reviews, and information and guidance to support the parenting and healthy choices …

… The Health Visitor Implementation Plan 2011-2015 … document sets health visitor centre stage and

• 're-affirms health visitors as the key professionals in public health delivery'.

…

The Leicestershire County and Rutland (LCR) Health Visiting Service is required to co-ordinate the HCP to children and families who are registered with NHS LCR General Practitioners, through Children Centre networks …

…

Through the delivery of the one targeted antenatal contact and the five universal postnatal contacts the health visiting service will deliver the national priorities at a local level.

…

(Page 6)

4. Roles and responsibilities

The Named Health Visitor is responsible for ensuring that the HCP (Healthy Child Programme) is offered to all children and families within Leicestershire County and Rutland. The HV (health visitor) is responsible for and coordinating the delivery of this programme and any actions that are required as a result of that contact.

> From the first contact with the family during the initial visit … the Named Health Visitor is the accountable practitioner.
>
> This accountability remains with the Named Health Visitor until either:
>
> • the child starts school
>
> • change of general practitioner
>
> The Named Health Visitor remains accountable for the delegated work undertaken by members of Health Visiting Team, ensuring that the work is appropriate for the competencies of the team member to whom the work is delegated …
>
> Within a corporate team a second health visitor may take responsibility for assessing and co-ordinating a specific episode of care. E.g. a health visitor who undertakes the weighing of a child during a baby clinic is accountable for that episode of care, but the overall responsibility of the case remains with the Named Health Visitor. This person should ensure that the delegation of work is to a team member with the appropriate skills to deliver, and also that a robust system is in place for supervision and guidance as needed…
>
> Any contact must be documented within the National Personal Child Health Record (PCHR/red book) and Leicestershire County and Rutland Health Visiting electronic records system as appropriate in line with the current record keeping policy.
>
> …
>
> Community Nursery Nurses (CNN) are not qualified or registered nurses. They have undertaken a national recognised nursery nurse qualification to a minimum of level three. They work within a health visiting team, undertaking many aspects of the healthy child programme which have been delegated to them by the Named Health Visitor (Community Nursery Nurse Competency framework and guidelines for practice 2010)."

43. In relation to the HCP, from birth up to age one year, three contacts are envisaged, these being the initial contact, the 6-week contact and the four-month contact.

44. The initial contact cannot be delegated. The contact setting is to be the home. At paragraph 6.2 (page 10) it states "90% of all new parents will be offered a 1:1 contact with a health visitor in their home, within 10-14 days of the birth of their baby." Part of the assessment of the general well-being of the baby (page 12) is described as "naked weight and head circumference obtained plotted on WHO centile chart in PCHR. (If birth weight not regained at 14 days calculate percentage weight loss)." The rationale/evidence section says "to gain baseline measurement in which future growth can be measured but for interpretation should be compared with birth weight."

45. The SOP (page 7) says that the 6-week contact cannot be delegated. There is however the entry "*HV/GP". The asterisk refers to "assessment of 6-week developmental review/maternal mental health MAY ONLY be delegated between HV and GP." (Page 7). On page 18, in relation to the 6-week check it states: "100 percent of families will be offered a 1:1 review by the Health Visitor within the home or local community setting when their baby is 6 weeks old."

There is then a table, extracts from which are:

"General wellbeing of the baby

• The 6 week HCP examination is undertaken by the GP
• If not already undertaken by the GP naked weight, head circumference (HC) should be plotted on the WHO centile chart in PCHR
• Parent/carer to be reminded to attend this examination, if not already seen by GP."

The "rationale/evidence" is:

"• To ensuring growth along expected centile lines in relation to growth potential and earlier growth measurements

• This weight is either undertaken by the GP as part of this examination or the Health Visitor when they undertake the maternal health assessment. If the baby is handled by the Health Visitor muscle tone including head control should be assessed and documented."

Under the heading "If action required" are the entries:

"• If concerned regarding weight gain further HV assessment
• If concerned re rapid head growth consider hydrocephalus/cranial stenosis. Urgent verbal/written liaison with GP should be made for assessment
• Any concerns discussed verbally or via written/IT format with GP format."

46. The four-month contact can be delegated to a community child health nurse or a community nursery nurse and the contact setting is "community setting" (page 7). On page 22 it states, in relation to the four-month contact, "100 percent of families will be offered a 1:1 contact with a member of the health visiting team at 4 mths. This contact should take place in a Children's Centre or a local community setting where possible."

Staying on page 22 it states:

"Core content

General wellbeing of the baby

• If there are any professional or parental concerns about the child's growth or development an assessment should be carried out by the Name Health Visitor. This should include checks on the following:

- Naked weight undertaken
- Child handled during this assessment to assess muscle tone/posture
- Development review as in PCHR

Rationale/evidence

• to ensure growth along expected centile lines in relation to growth potential and earlier growth measurements.
• to ensure developmental milestones are achieved.

If action required

• Referral back to Named HV for further assessment. If weight has deviated above or below two centiles since birth review weight within two weeks or earlier using professional clinical judgment. Further guidance if weight deviation from expected centile to be given with Healthy Weight Pathways."

The red book/personal child health record (PCHR)

47. The PCHR, commonly known as the 'red book', is an integral part of the HCP. It had been an integral part of the programme prior to the HCP. The red book is owned by the NHS. In conformity with the SOP any contact must be documented in the red book and the health visiting records system, known as SystmOne. SystmOne contained computer-generated graphs where data would be entered and the computer would generate a plot.

48. The red book contains different sections including immunisations and growth. For assessments e.g. the new-born hearing test, the 6-8 week or 4-month reviews there are carbonated copies intended to be detached from the book and sent to relevant professionals, such as the general practitioner and the health visitor team. The red book contains separate graphs for weight, head circumference and length.

Textbook

49. I was referred to pages from the standard textbook of Hall & Elliman: Health For All Children, 2006, revised fourth edition, reprinted 2010 (referred to as 'the textbook' or 'Hall'). Relevant extracts are at pages 184-188 as follows:

> "[8]**Occipito-frontal head circumference (OFC)**
>
> Reasons for measuring the head circumference
>
> The routine measurement of head circumference is intended to aid the detection of two groups of disorders - those characterised by a large head, and those characterised by a small head.
>
> Conditions with enlargement of the head include hydrocephalus, subdural effusion and haematoma, and a number of less common conditions associated with dysmorphic syndromes etc.
>
> Hydrocephalus characterised by a head measurement that is crossing centile lines upwards, together with the well-known features of suture separation, tense fontanelle, prominent veins,

[8] Page 184.

downward gaze, irritability, and sometimes developmental abnormalities. Early treatment for hydrocephalus is desirable, though there is no conclusive evidence that it improves outcome.

A much more common cause of head enlargement is a familial large head, in which the growth line may cross centiles but the other symptoms are usually absent and a close relative, often the father, also has a large head circumference …

…

[9]Screening and monitoring

A head circumference measurement in the neonatal period is potentially useful for two reasons. The first, if the measurement is abnormal at this time, the problem is clearly of antenatal or intrapartum origin. Second, a baseline measurement may occasionally be useful if there is thought to be rapid head growth in the early weeks of life. However, the measurement is of little value if it is taken while there is still marked scalp oedema or moulding. A further measurement at the 6-8 week measurement is usually recorded.

…

[10]Recommendations

• Staff training in measurement technique, the interpretation of growth charts …, normal growth and its variants … is vital …

[11]Head circumference

• The head circumference should be recorded before discharge from hospital following birth. This is an important measurement and should be performed and recorded carefully…….

• Head measurement should subsequently be undertaken at approximately 6-8 weeks of age. It should be plotted on the chart and also written in figures. If there is no concern at this time no further routine measurements are needed, but the OFC should always be measured and recorded if there is any concern about a baby's growth, health, or development.

• If the growth line is crossing centiles upwards and the child shows symptoms or signs compatible with hydrocephalus or other abnormality, specialist opinion is essential. If there are no accompanying symptoms or signs, two measurements over a four-week period are acceptable. Beyond this time limit, a

[9] Page 185.
[10] Page 186.
[11] Page 187-188.

> decision must be made to either accept the situation as normal or to refer the child for specialist examination.
>
> • There is no justification for repeated measurements spread over many months, a practice which is to be deplored because it creates excessive anxiety …
>
> • These apparently straightforward monitoring procedures must not be regarded as simple screening tests. Skill and judgment are required in deciding how to interpret the measurements and no single pass-fail criterion can be proposed.
>
> **[12]Audit**
>
> The quality of measurement and charting, and the action taken when abnormality is suspected, should be reviewed … the number of new cases detected by monitoring, their subsequent management, and the reasons for any delay in diagnosis are suitable topics for audit. Growth clinics should monitor their own performance in collaboration with district and tertiary services."
>
> **[13]Research**
>
> ……Specific issues include….
>
> - Although the guidelines regarding head circumference monitoring are generally accepted in the UK, little is known about the accuracy, value, or optimal timing of regular head circumference measurement or the relative merits of different referral criteria…."

The parents' evidence

50. The Claimant's parents were married in 2005. They had three other children who were born in 2007, 2008 and, more recently, in April 2019. They explained in outline just how catastrophic the Claimant's injuries are. I will not go into any detail, this being a trial on liability only. It is right to record that in Mr Todd QC's opening skeleton argument, although he invited the court to dismiss the claim on the basis there was no breach of duty, nevertheless he accepted "this is an utterly tragic case and one can only have the utmost sympathy for XM and his family". The parents' statements refer to the fact that the two antenatal scans suggested that their son was small for his dates in both his head and abdominal circumference. However, when the Claimant was born he

[12] Page 188-189.
[13] Page 189.

appeared healthy. The parents dealt as best as they could with the relevant visits/assessments until October 2012.

51. Both parents refer in their statements to the fact that the record refers to a reminder about a separate 6-week GP check. They did not recall being reminded of this or of any discussion about their son being seen by the GP at the age of 6 weeks. The Claimant's mother says that she has looked at the red books of her daughters and neither of them saw a health visitor and a GP at a 6-week review. They were just seen by the GP. The Claimant's parents say that, in their own mind, they did not miss any scheduled appointments. They have always taken great care to ensure that their children attend all the medical appointments they need.

52. It became clear in oral evidence that the Claimant's mother does not drive. That is why her husband would usually take the children to medical appointments away from the home. The parents were asked about three entries in the records. Their evidence was as follows:

    i) On 29th June 2012 a GP entry has a checklist of checks on the baby. It ends with "see again for 6/52 check." Neither parent had any recollection of this. From their evidence it seems probable that FM took the baby for this check, although it is possible his wife was with him.

    ii) On 16th July 2012 a midwife, S Dacko, saw the Claimant. Neither parent had any recollection of this. It is not clear which parent(s) was/were present at the time of this check. The midwife has written "discussed … 6/52 GP check."

    iii) On 8th August 2012 Mrs Furmage did her home visit. Neither parent remembered this. In the red book she said that those present were both parents, YM and ZM (the Claimant's older sisters). In that book, amongst other things, she wrote "GP check to be booked. BCG tomorrow … clinic appt booked for 20/9/12 at 1.30." In the SystmOne entry she typed "parents reminded to book 6-week GP check."

53. FM said that he did not understand that his son had to see the GP; otherwise he would have booked him in easily because he was already going for the BCG. He said that all children have had appointments and they have not missed any; he and his wife are very precise and do not take the risk of not attending. Whatever they were told to do they did it. They have trust in the NHS. In re-examination he was taken to ZM's red book which says "first review at 6-8 weeks. This review is done by your doctor …" By comparison the Claimant's red book stated "6-8 week review. This review is usually done by your health visitor or a doctor …". FM said he did not remember if emphasis was given that it was important that there be a check by the GP. He did not remember registering at the time (i.e. in 2012) that there was a difference between the two red books in this regard.

54. On 9th August 2012 the Claimant's father took him for his BCG vaccination and for the rest of his immunisations on 28th August 2012. No other checks were carried out on these dates.

55. At about this time, i.e. in August, the Claimant's father began to wonder whether his son had a large head. He was not worried about it but he mentioned it to his wife. She

telephoned her mother who said that her brother's son had a large head and it was probably something that ran in the family. This reassured them, but FM still had the feeling that his son did not look quite right. He was also concerned that this might be because he was underweight. A clinical appointment was therefore made with the GP for 20th September 2012.

56. Other entries showed that he cancelled the appointment he had made for 20th September 2012 with the GP and re-booked it for 3rd October 2012. That was then cancelled by him and he asked for a home visit as they wanted to check the baby's weight was okay. That visit was re-arranged for 8th October with nursery nurse Sharon Zanotti (Makwana). FM accepted that he had no difficulty contacting the GP surgery.

57. On 11th December 2012 FM took the Claimant to the GP because of eczema. He did not recall that appointment. He then took him on 19th December 2012 for a chesty cough for which he was prescribed antibiotics.

58. In evidence in chief, Miss Gollop QC asked FM some questions as to whether he knew that in January 2013 the health visitor team was discussing whether he had made a complaint. He did not know this. Nobody told him that his son was being investigated or asked him about the health visitor appointments monitoring his development. On 11th February 2013 there is recorded a phone call with a community practitioner, Angela Kirk. During this conversation FM said he did not want to attend a meeting if her manager was the same health visitor who had visited him at home. FM remembered the conversation but not the details. Looking at the note he remembered that he had lost trust in the team of people caring for his family and he wanted another professional to attend. He did not remember making any complaint. He was looking into the procedure about making a complaint, but was unaware of where to go next. His belief was that he did make a complaint. There was a lot going on at the same time.

59. Finally, FM was asked about a photograph that was taken on 21st October 2012. This shows the Claimant's mother holding him. At that time, he had eczema but he seemed normal, happy and healthy.

The Neurosurgeons' Reports

60. I shall deal first with the neurosurgeons' evidence prior to December 2019. They were asked about the probable trajectory of the Claimant's head circumference. They plotted the measurements taken on 10th July 2012, 8th August 2012 and 30th/31st December 2012. They agreed a trajectory for the Claimant's head circumference incorporating these measurements. They described this as the 'most likely course for the head circumference growth'. They further agreed:

    i) That according to the entries in the Claimant's red book the measurement of 10th July 2012 lay just above the 25th centile line and that of 8th August 2012 just above the 50th centile line. The increase in the head circumference was due to hydrocephalus caused by excessive CSF produced by the tumour.

    ii) The head circumference as at the date of the missed GP appointment/8-week check on 22nd August 2012 would have been just below the 75th centile. Had the Claimant been referred to a paediatrician about this time, that paediatrician would have been presented with a healthy child whose head circumference had

grown from just above the 25th centile at 13th July 2012 to just below the 75th centile at 22nd August 2012. Even if no imaging had been carried out at that time, i.e. about 22 August 2012, arrangements would have been made for the head circumference to be measured again soon. Had it been so measured shortly thereafter, on a balance of probabilities the 75th centile would have been crossed. Professor Mallucci added that at this stage either imaging would have been organised or there would have been a re-measurement a week or so later. That would have led to imaging and diagnosis within a week or two at the latest, as the head would have continued to cross the lines as drawn. Both Professors agreed that ultrasound would have shown hydrocephalus and CT imaging would have shown the tumour[14].

iii) As at 5th September 2012, when the Claimant was aged 10 weeks, both neurosurgeons agreed that the head circumference would have been about to meet the 91st centile. Had he been referred to a paediatrician, he would have had ultrasound/CT scan which would have shown hydrocephalus on the ultrasound and tumour on a CT scan.

61. In summary, in the first joint report Professor Hayward said that the Claimant's head circumference crossed 1 centile (the 50th) between 10th July 2012 (when it was just above the 25th centile) and 8th August 2012 when it was just above the 50th centile and would have reached the next centile (75th centile) at around 8-9 weeks of age. Put another way by Professor Mallucci, according to the agreed plotted chart the Claimant went from the 25th centile at two weeks to the 75th centile at 8-9 weeks, i.e. he crossed two centile lines. There was agreement also that, assuming crossing two centiles to be the agreed trigger for referral back to the GP, the result would have been referral to local paediatrician services where imaging would have been requested and, as stated above, would have revealed the hydrocephalus and the tumour. This would have led to referral to the neurosurgery department at the hospital. Arrangements could have then been made, not as an emergency, for the tumour's elective removal within 1-2 weeks.

62. It was agreed that that Claimant's permanent and catastrophic brain damage was caused by raised intracranial pressure secondary to untreated hydrocephalus after decompensation. Also, the appropriate treatment prior to the Claimant's head circumference crossing the 99.6 centile would have left him with no material disability.

63. The experts agreed that as at 8th October 2012 the head circumference would have been some 44 cms (between the 96th and 99.6th centile). It would have been 44.5 cms i.e. on the 99.6th centile as at 16th October 2012[15]. The black line trajectory was plotted on a graph. Thus:

i) a diagnosis made from birth to crossing the 99.6th centile during October 2012 would have left the Claimant emerging with no material disability.

ii) A diagnosis made between crossing the 99.6th centile and 19th December 2012 would have led to an incrementally increasing degree of neuro-cognitive and behavioural disability. Thus, to avoid any permanent damage, intervention would have been needed prior to the Claimant crossing the 99.6th centile. In

[14] Cf para 32 of the RAD referred to above.
[15] Joint statement 13th September 2019: Professor Mallucci's response to question 5.

order to avoid incrementally increasing permanent damage likely to have been manifested as neuro-cognitive/behavioural harm, intervention would have been needed before the 19th December 2012 GP visit.

iii) To avoid the catastrophic damage which the Claimant suffered, intervention would have been needed before the coning which was present from 30th December 2012 onwards. From 19th December 2012 onwards shunt surgery probably became unavoidable.

64. That is a summary of the written evidence from the neurosurgeons prior to December 2019. The Defendant's opening note reflected the position in paragraphs 18-21. At [18] it stated: "The crucial agreements between the neurosurgeons are (i) that XM's HC probably reached the 75th centile line at 8-9 weeks of age, hence by no later than 28 August 2012; and (ii) that XM's HC probably crossed the 99.6th centile line during October 2012". After referring to the agreement on causation, at [21] it concluded: "The Court's precise finding as to causation will therefore depend on which, if any, allegations of breach are made out" and, at [17], "If….breach of duty is made out, causation is unlikely to detain the Court for very long".

65. In his March 2020 report Professor Hayward discussed why no disproportionate increase in the Claimant's head size was observed by the Health Visitor Service or, apparently, by the General Practitioners who saw him on 11th December 2012 and 19th December 2012. To help to explain this he considered how much smaller in centile terms the head could have been compared with the previously agreed projection. He suggested that if the head had been below the 91st centile it would have appeared materially smaller. He plotted on a further graph the line from the known measurements up to 8th August 2012 to the known measurement on 30th December 2012, allowing for the head to have been just below the 91st centile (a) at the time of the October 2012 visits (the red line) and (b) at the time of the 13th November 2012 visit (the blue line).

66. Both the red and the blue lines require some lessening of steepness in the trajectory before the relevant October/November dates, with concomitant increase in steepness from those dates to 30th December 2012. This compares with the originally agreed black line which was straight from August to end December.

67. Professor Hayward's opinion was that the red line deviated from the black line 'only minimally' until 30th December 2012 in the steepness of its ascent. He said that the Claimant's head: 'could indeed have been below the 91st centile at his sixteen-week examinations without jeopardising the known train of subsequent events'. However, as to the blue line, his opinion was that the projection steepened the subsequent growth of the head still further from 13th November 2020 'to a point that in my opinion would have led to the onset of symptoms and signs of raised intracranial pressure (from the hydrocephalus) earlier than December 19th 2012'.

68. Professor Mallucci's supplementary report can be summarised as follows:

(i) looking again at the data including the ante-natal measurements, the two ante-natal measurements on 1st May 2012 and 1st June 2012 show head circumference respectively below and a little above the 5th centile. The short interval from then to the measurement on 10th July 2012 enables a straight line to be drawn which gives a measurement with a high degree of confidence that at birth the head circumference would have been just

below 34 cm, i.e. on about the 9th centile. This was agreed in the supplemental joint statement.

(ii) he could not see any likely alternative scenario for the pattern or trajectory of head growth, other than that shown on the previously agreed black line.

(iii) Head circumference, height and weight tend to correlate. The majority of healthy babies have heads and bodies that are in proportion to one another and are roughly on the same centile. Looking at the Claimant's height measurement in hospital (he says the July 2014 height looks as though it may not be reliable) and his weight in infancy, and assuming a rough correlation between the two, his height, like his weight, between birth and 6 months were probably between the 9th and 25th centile. The only explanation for his head circumference not being between those centiles was the tumour and resulting hydrocephalus that produced a head circumference pathologically and rapidly crossing centiles.

(iv) As to the GP examinations in December 2012, he did not know whether the GPs saw the Claimant unclothed. It is very difficult to assess growth in a clothed baby. The GPs were not being asked to assess growth and it is unsurprising that they did not opportunistically detect a head growth abnormality when appointments were for specific health problems that were not growth related.

69. In the neurosurgeons' supplemental joint statement Professor Hayward said that, in response to a supplemental agenda of November 2019[16], he and Professor Mallucci said that to slow the rise in the Claimant's head circumference so that it lay below the 99.6th centile at 16 weeks required an impossible *'Near-vertical rise of several centimetres in the days/weeks to follow'.* He said that the aim of his addendum to his previous report (after the revision to the Particulars of Claim) was to examine whether there could have been a trajectory explaining why the head circumference did not provoke concern at 16 weeks. Hence the red line. His opinion was that any 16 week head measurement lying between the red and black lines would be associated with a variably more regular appearance of the head and still be compatible with normal development.

70. The neurosurgeons were asked how to explain, on the red line trajectory, an increased rate of growth, followed by a period of slower growth, then a further period of faster growth. Professor Hayward replied that the increase on head circumference caused by hydrocephalus results from stretching of the skull vault sutures, a process that does not always progress in a geometrically linear fashion. Therefore, the difference between the black and red lines was not so great as to require a novel anatomical/physiological explanation. Since the great majority of infants with hydrocephalus are diagnosed before their head circumference has risen 'off the chart', whether or not there would have been fluctuations in the rise of the Claimant's head circumference must remain a matter of speculation.

71. On these matters, Professor Mallucci said that by far the most likely growth trajectory was the originally agreed black line and that in the context of a growing tumour and ever-increasing CSF production it is impossible to explain physiologically a slowing down and then speeding up in head circumference growth.

[16] This document was not in the trial bundle.

72. There was agreement between the neurosurgeons on two further matters:

(i) Frontal bossing, which the Claimant did not exhibit, can be a useful warning sign of hydrocephalus, but its absence does not rule out the diagnosis. Professor Mallucci added that frontal bossing is more a feature of benign enlargement of the subarachnoid spaces, a condition associated with macrocephaly. Hydrocephalus is more commonly associated with a more uniform enlargement of the head, as in this case.

(ii) Regardless of the trajectory of the Claimant's head circumference measurement, he showed a remarkable ability to compensate and 'stay well' until his compensatory mechanisms were exhausted and symptoms developed. This would account for Mrs Hewitt's observation of the Claimant on 13 November 2012 as 'very settled – alert, responsive and very vocal…seen today smiling, fixing and following..'

Professor Mallucci's oral evidence

Experience

73. Professor Mallucci is a paediatric neurosurgeon who has been a consultant since 1998. He has a particular interest in oncology. He said that he was one of the most experienced tumour experts in the country. His other interest is hydrocephalus. He has published 140 papers, the majority of which are on these two topics. For some years he was chairman of the National Hydrocephalus Group.

The head circumference trajectory

74. Professor Mallucci said that the black line was an estimate with high probability. The ante-natal ultrasound measurements were very reliable. He and Professor Hayward agreed that the head circumference at birth would have been around the 9th centile, or just under 34cms. There were then Mrs Furmage's two measurements. Finally there were the measurements in December 2012. These measurements enabled the black line probable trajectory to be plotted. He said that when he and Professor Hayward agreed the black line, it was by far the most likely scenario based on their knowledge of hydrocephalus and tumour growth. He had never seen a growth slow down and then speed up again. Professor Hayward and he had both used common sense and clinical judgment when they met.

75. In a normal baby CSF production is constant and does not vary. It is about 400-500 mls per day. Professor Mallucci said that the tumour grows on a specific trajectory which doubles regularly over a specified period of time. What was not known was the equivalent rate of production of extra CSF caused by the tumour. Realistically there could be no research on this because, once identified, the tumour had to be treated. Nevertheless, the presumption is that as the tumour grows it produces increasing CSF in direct proportion to its growth. The tumour grows daily. As it grows it pours out more CSF every day.

76. Mr Todd QC asked Professor Mallucci about a question and answer (4) in the first joint statement. The question was:

> "Do you think CSF production was constant and incremental at all times from shortly after birth until treatment?"

> The answer was "really, we don't know – this has never been studied. But in principle the effect of the hydrocephalus was of an incrementally increasing ICP (intracranial pressure) over time."

77. Mr Todd suggested that this response was at variance with the evidence that normal CSF production is constant and the presumption is that as the tumour grows its CSF production is in direct proportion to its growth . Professor Mallucci, despite having used the word "incrementally" in his response, said he did not know the answer to the word "incremental" in the question because the rate of extra CSF produced by the tumour is not known.

78. Nevertheless, Professor Mallucci was clear that, although the exact rate of production of CSF from the tumour is not known, it was not feasible for a tumour to produce less CSF in one period. Nor did he see variability in tumour growth as a possibility. Tumours grow on a specific trajectory. For that reason he did not accept that the red line produced by Professor Hayward was feasible. He said that, if anything, one might get rapid growth in head circumference slowing at a later stage as the head elasticity reduced.

79. It was also put to Professor Mallucci that a factor affecting the trajectory could be the accuracy of various measurements. He accepted this in that there can be a variability of 2-3mms in measurement. He said that generally he did 2 or 3 measurements for consistency. This would not explain the red line of Professor Hayward. This is because there were two good antenatal measurements and a measurement at 2 weeks and about 6 weeks by Mrs Furmage. Joining up those dots, even if there was some variability in the measurement would not give rise to the red line. There would have to be a complete new line to explain how to join the plotted measurements up to and including August 2012 and then the December 2012 measurement. In any event the suggested variability in measurements did not feature in Professor Hayward's evidence. I find that the measurements were accurate on the balance of probability

80. The neurosurgeons were asked, on the recommencement of the trial, a number of questions which had arisen and concerned breach of duty rather than causation. I will review the evidence on breach later in this judgment, but it is necessary to make reference to it at this point

Breach of duty

81. Professor Mallucci said about the WHO document, the HCP and the Hall textbook that, outside the confines of this case, he would not have seen these documents before. They are not texts which paediatric neurosurgeons use. He accepted that the source for the HCP was the 2006 version of the textbook, and that both documents suggested there should be two measurements only - at or around birth and at 6-8 weeks - unless there were concerns.

82. As regards the textbook statement that

> "a much more common cause of head enlargement is a familial large head, in which the growth line may cross centiles but the other symptoms are usually absent and a close relative, often from the father, also has a large head circumference."

> – Professor Mallucci said that usually familial large head does not give rise to crossing centile lines, though it may do. It is not a pathological condition. If it does cross centile lines, it usually does so much later in the period after 6 months of age. He said in re-examination that he and Professor Hayward did not discuss familial large head. All people have a range. Usually a familial large head is in proportion to the body and not associated with rapid head growth crossing centile lines quickly. If there is a large head because of familial reasons, any crossing of centile lines normally happens at 8-9 months. Most families know if they have familial large heads; health visitors would look at the family if there was to be any consideration of this.

83. The Claimant did not have frontal bossing or flattening at the back of his head which is what is normally found with a familial large head. Professor Mallucci said babies with familial large head often lie on their back a lot.

Head circumference measurement

84. Professor Mallucci also accepted from the Hall textbook[17] that growth lines crossing centile lines upwards are the red flag for possible hydrocephalus. Crossing centiles required more than one centile according to the textbook. He said that this was a guideline. In neurosurgery it is not so simple. He said that this is a straightforward guideline for health visitors. Sometimes the neurosurgeons had babies referred to them if they were borderline. Nevertheless as guidance for referral, he agreed that two centile spaces being crossed was the "red flag".

85. In his first report[18] Professor Mallucci had said that, although it was a matter for other experts, the increase at 2 weeks (head circumference somewhere around the 25th centile) crossing to approximately to the 50th centile at about 6 weeks

> "should have at least prompted a plan to monitor the head circumference."

In cross examination he accepted that on the black and white interpretation of the textbook, there would not be such a prompt. This is because the head circumference measurement had not crossed two centiles. His opinion was from a neurosurgical perspective. To comment on a health visitor's perspective was a matter for other experts.

86. In re-examination Professor Mallucci said that when he saw children he often saw them with their red books because, in considering hydrocephalus, it is all about trend in growth and deviation in trends. An isolated head circumference measurement is not a basis for treatment. From the red book his usual assumption is that there would be a measurement at about birth and then one at about 6-8 weeks[19]. Therefore, professionals are usually asked to look at growth over a minimum of a 6 week period. Here the health visitor did not have the benefit of measurements in utero and also did not have any information about birth centile head circumference measurement. The only

[17] The section sub headed "Head Circumference."
[18] Paragraph 52.
[19] The second part of the trial was heard remotely and Professor Mallucci did not have a copy of the red book in front of him.

measurements she had were at about 2 weeks and her own measurement at 6 weeks. If there was no measurement at birth, then it was not possible for her at 6 weeks of age to assess growth over a 6 week period.

Disproportion

87. Professor Mallucci was asked about his supplemental report where he said that he agreed that head circumference, height and weight tend to correlate, and that the majority of healthy babies have heads and bodies that are in proportion to one another and which are roughly on the same centile. He accepted that there was very little research on this. He was taken to a paper[20]. This paper pointed out that only few studies had investigated the association between head circumference and height. These studies had widely variable and even conflicting results. In addition there were very scarce data on possible associations with other anthropometric measures, such as body weight. The paper states:

> "If there were a strong correlation of HC with height or weight, reference charts for HC for height or weight could provide a tool to better interpret HC in short or tall children, and possibly enable early diagnosis of growth disorder."

That was the reason for the study in which the authors studied the association between HC and height and weight for both sexes in various age groups (0-21 years) of children of Dutch ancestry. The result in the abstract says

> "Conclusion: HC correlates strongly with height and weight. The charts of HC for height may serve as an additional tool to interpret HC in short or tall children."

88. The 2010 textbook stated "There has been very little new work on head circumference measurement." Professor Mallucci accepted this. He said that sometimes studies are not done because they are not needed. Guidelines come out of clinical experience and common sense. It is necessary that guidelines can be used with reasonable ease by health visitors who have a difficult job. He said that a mismatch in the proportions of the size of the head and body was another indicator of a possible problem. Also, if one starts with a child where the mismatch grows with time, that is a significant sign. The criterion for evaluating head circumference growth is crossing the centiles. However a mismatch which evolves was of significance.

89. The most likely time for disproportion to be spotted would be if the baby was naked. Lifting up a garment on the thigh for vaccination would be unlikely to show disproportion. The baby would have to be either naked or perhaps wearing a nappy. He said that health visitors and nursery nurses are not being asked to diagnose but to spot something which raises a concern. Professor Malucci trains his registrars to look at weight, height and all centile lines - as a disproportionate head is potentially a red flag. Professor Mallucci was cross examined as to why disproportion was not mentioned in his first report. He said that it was a report on the growth of the tumour and causation. He was not focusing on breach of duty.

[20] Geraedts et al: Hormone research in paediatrics 2011; 75: 213-219.

The 21st October 2012 photograph

90. This photograph shows the Claimant in profile wearing loose fitting clothes. Professor Mallucci said that even on a side view the baby's head looks what he described as "scaphoid" and "elongated". He said that it was compatible with the head of baby on the 99.6th centile, though he did not have a frontal view to confirm. As to proportionality in relation to the body, this was not possible to judge when he was wearing a baggy jumpsuit.

91. Professor Mallucci was asked why he did not say in any report that the photograph was probably that of a baby with a 99.6th centile head.[21] Professor Mallucci said that in his supplemental report he was responding to what Professor Hayward had said . On one profile view of the photograph alone he could not say that it was obvious that the Claimant was on the 99.6th centile, but it was entirely compatible. His view was that an undressed baby in the side-on photograph would probably have allowed the health visitor in October 2012 to assess the Claimant as having a head on the 99.6th centile. If the health visitor had just seen the head in isolation, it would be difficult to say that she probably should have seen this. It would be necessary to assess the body and the relationship of the body with the head. Based on everything he knew, Professor Mallucci believed that by that stage the Claimant's head circumference had crossed the 99.6th centile.

92. It was difficult to say whether the head would have started to look abnormally large before crossing the 99.6th centile.

93. It was suggested to Professor Mallucci in cross examination that it was strange that nobody spotted the abnormally large head[22]. Professor Mallucci said he did not regard it as odd that others had not remarked upon the Claimant's head. He said that many babies are referred late to him because children can look very well with a big head. If you are not looking on examination for a large head and not doing a full examination so that you can see disproportionality with the body size, then it is easy to miss because of the absence of symptoms.

Professor Hayward's oral evidence

Experience

94. Professor Hayward is a paediatric neurosurgeon at Great Ormond Street hospital. With particular reference to this case he is the co-author of three papers on the type of tumour from which the Claimant suffered. Two recent studies have looked at the rate of CSF production.

95. In relation to those studies, Professor Hayward said that children sometimes present with hydrocephalus which is as severe as in the present case. In a number of cases the

[21] Specifically paragraphs 7-9 of Professor Mallucci's supplemental report of May 2020.

[22] Reference was made to 28th August 2012 vaccination by a community practitioner at the GP surgery, 25th September 2012 vaccination by a community practitioner at the GP surgery, 30th September 2012 vaccinations, 30th October 2012 vaccinations by a community practitioner at the GP surgery and then the visit to the general practitioner on the 11th December 2012 for eczema and on 19th December 2012 (different general practitioner) for a chesty cough. In addition there is an entry dated 21st November 2012 of Dr Barfield (who saw the claimant on the 19th December 2012) giving a prescription from the GP surgery.

doctors have to do a temporary operation. The tumour is the engine for producing excess CSF. The CSF accumulates under increasing pressure in the ventricles. Once the tumour is removed, even if it is removed successfully as in the Claimant's case, often the CSF is unable to circulate in its proper way and therefore a shunt, i.e. a catheter, drains the CSF into the abdominal cavity. This is called a ventricular-peritoneal shunt. When the shunt is introduced the CSF which is drained gives an idea as to the excess production caused by the tumour. CSF production is greatly increased by the tumour.

96. Professor Hayward said he was not able to say if there was a proven correlation between the size of the tumour and the amount of CSF it produced, but he accepted that it stood to reason that as the tumour grows there will be a concomitant increase in CSF production. It was not possible to give figures.

The red/blue lines

97. Professor Hayward said that the Claimant's case is very unusual from a neurosurgical point of view because of two features:

i. The Claimant remained so well until mid December 2012

ii. An extraordinary number of people did not notice any disproportionately large head despite seeing him in the autumn of 2012.

After the adjournment of the case part heard, Professor Hayward revisited the matters. He asked himself how he could reconcile these two factors. In other words, is there an increase in the tumour at 4 months which increased the head size and was still compatible with the Claimant's progress? For that reason he drew the red line. His opinion was that it moved away from the original black line to a relatively minor degree. He said that it moved away in the early stages when the head had its greatest capacity for expansion. He gave his opinion that this was entirely compatible with the growth of the tumour.[23]

98. In cross examination Professor Hayward accepted that he had always been aware of the two factors which he said made the Claimant's case very unusual. They were specifically set out in his first report[24]. Indeed in that report he gave those reasons for his statement

> "There are several reasons to doubt the increase in his HC was linear"

He accepted that he had these factors in mind when discussing the probable trajectory with Professor Mallucci in 2019. However he said the most important thing on which they were concentrating was when the head circumference crossed the second centile. He revisited the black line because of the emphasis in the RAPC on the Claimant's appearance to health professionals.

99. Professor Hayward said he could not think of any reasons why at the December 2012 GP examinations they did not see an abnormally large head. The red line produced a

[23] As regard the blue line Professor Hayward said he tried to draw a line which took account of Nurse Hewitt's visit in November 2012, but this made the line too vertical.
[24] Page 16.

plausible explanation for why, until October 2012, the Claimant's head did not cause concern. He conceded that the red line did not explain why the head size was not observed later, particularly during the December examinations.

100. Professor Hayward was challenged on his evidence that the focus in the first report of the two neurosurgeons, and particularly in their first joint statement, was not about when the Claimant crossed various centile lines. A number of points were made:

i. In question 16 of the joint statement the experts agreed that appropriate treatment prior to the head circumference crossing the 99.6th centile would have left the Claimant with no material disability

ii. There was specific focus in questions 6 and 10 as to the centile of the Claimant's head circumference on 22nd August 2012 (aged 8 weeks).The neurosurgeons agreed that he would have been just below the 75th centile; secondly they agreed that on 5th September 2012 (aged 10 weeks) the Claimant would be about to meet the 91st centile for head circumference.

Professor Hayward accepted that the date of the 99.6th centile was very important and that he had not given any variables when agreeing the black line trajectory in 2019.

101. In oral evidence Professor Hayward said that although the black line is a very probable line, even if one took out of the equation the fact that a number of professional people missed the appearance of the Claimant's head, the fact that he still looked well favoured the red line over the black as a trajectory. This was despite the fact that he had previously agreed that the black line was the most probable and, even in the supplemental joint statement, he had not said that the red line was more probable than the black line. What he had said was that his further evidence….

> "…was to assist the Court by examining in greater detail whether there could have been a trajectory to set out head growth following the measurement of July 10th and August 8th 2012 that explained why his head size did not provoke the concern of an experienced health visitor (nor Ms Zanotti) when he was 16 weeks old (and did not look unnaturally large in the photograph of October 21st) but would still be compatible with his normal development until December."

102. To seek to explain physiologically how the red line might accommodate its two changes in gradient, i.e. a slower gradient of increase after the 8th August 2012 measurement and a faster increase in gradient from 16 weeks onwards, Professor Hayward gave an example. He said that if one has an elastic vessel full of water and adds 100cc then its size will increase. If one keeps adding the same amount all the time, the 100cc added is a lesser proportion of the total volume. If one increases the added amounts then the increase in size will continue going up. Whether this increase is exponential or not is up to the vagaries of production. This example is compatible with the growth of the tumour because it did not commit to a particular line except one that was going upwards.

103. Professor Hayward agreed with Professor Mallucci that the tumour did not at any stage stop producing CSF. He said that his chart fell within the margin of error of what the tumour might be producing at any one time. As another possible explanation of the

change in gradient in the red line Professor Hayward said that the greatest disparity between the two lines was when the Claimant's capacity to accommodate hydrocephalus was at its highest. When he was later running out of capacity the lines become very close together. It was pointed out to him in re-examination that there were two changes in gradients. He said he did not have a physiological explanation for that, but he attributed it to the vagaries of what we do not know i.e. the vagaries of the fibrous parts of the head which are capable of expanding (the sutures). He said the capacity of the sutures to expand may be such as to produce a linear increase in head circumference or it may be that the expansion varied more or less from a linear trajectory. His experience was that there could be a variability in the graphs. This was most obvious where hydrocephalus was growing at a slow rate and there were numerous dots plotted.

104. In summary Professor Hayward, admittedly based on speculation, said that the red line could be attributed to:

i. Variability of the sutures to expand and accommodate extra CSF throughout the course of the increased production of the CSF.

ii. Lack of knowledge as to the CSF increase in production in terms of its rate of increase and possible fluctuation.[25]

105. Professor Hayward accepted the possibility suggested by Professor Mallucci that if one was to draw a line other than the black line, it would be to left and not to the right of the black line i.e. the Claimant's head would be more elastic when he was younger. His response was that that did not explain why the large head size was not spotted by professionals.

The 21st October 2012 photograph

106. Professor Hayward was briefly asked about the 21st October 2012 photograph.

107. Professor Hayward said that there was no striking abnormality on the photograph and no frontal bossing characteristic of hydrocephalus. He agreed that it was scaphoid in appearance i.e. elongated front to back. However he said that children's head shapes vary. With hindsight one could say that the back of the head looked bigger than it should, but, based on that profile photograph, it was not obviously abnormal. Though it was compatible with a 99.6th centile head, it was not strong evidence of one.

Conclusions on the likely trajectory of growth

108. I have set out the evidence of the neurosurgeons in some detail. The essential dispute between them now is as to whether the black line or the red line is more probable. I have come to the conclusion on the clear balance of probabilities that it is the black line which should be accepted as the more probable trajectory.

I summarise my reasons briefly:

i) When the neurosurgeons agreed the black line trajectory in 2019, Professor Hayward had specifically flagged up in his report the fact that the Claimant remained remarkably well, and that a number of healthcare professionals had

[25] He was not suggesting that the tumour slowed down in production of CSF and speeds up again.

not seen a head which would have started to look abnormally large sometime after crossing the 99.6th centile. Despite this he undoubtedly agreed that the black line was the most probable.

ii) Although the Claimant did present as being well and without symptoms until December 2012, the Claimant's skull had a remarkable capacity to accommodate excess CSF without causing symptoms. Even on Professor Hayward's red line, the 99.6th centile would have been crossed by about 13th November 2012. The Claimant had no observed symptoms referable to the hydrocephalus as late as 19th December 2012 when he went to the GP. He presented at the emergency walk-in centre on 30th December 2012. By this stage almost 7 weeks had passed from 13th November 2012. In that context the Claimant's apparent wellness does not appear to be any proper basis for shifting from the agreed black line to the red line.

iii) As to the failure of health professionals to register that the Claimant had an unusually large head, a number of these can be explained by the fact that, as Professor Mallucci said, when seen for a vaccination or some other unrelated matter, in circumstances where the health professional is not looking for an abnormally large head and the child is not naked or naked apart from a nappy, it is difficult to spot an unusually large head. This accords better with the evidence than shifting from the black to the red line, particularly since Professor Hayward's red line does not explain three GP visits in November/December 2012.

iv) Whilst there are some unknowns in terms of direct correlation between increase in CSF and elasticity in the head, and possibly variation in the rate of increase in CSF, these are not enough to displace the balance of probabilities. Professor Hayward fairly accepted that they were matters of speculation in order to cater for the fact that health professionals had not noticed the unusually large head. I consider also that, even though the increased rate of CSF production caused by the tumour is not known, the presumption is, as Professor Mallucci said, that the tumour produces increasing CSF in direct proportion to its growth.

v) I consider that Professor Hayward correctly put the matter in the supplemental joint report by trying to explain whether there could be an alternative trajectory. That was what he was asked to do, and in the report he did it using careful language.

vi) However the starting point of trying to explain whether there could be an alternative trajectory is one that influences the outcome. The question I have to decide is whether on the balance of probabilities I should accept the black line or the red line, or something in between, as being the most probable trajectory. I prefer the evidence of Professor Mallucci and accept that the black line was the most probable trajectory of the Claimant's increase in head circumference.

109. I have of course factored into this decision the evidence of Mrs Makwana (visit 8th October 2012), Mrs Kirkpatrick (assessment 15th October 2012)[26] and Mrs Hewitt

[26] Mrs Kirkpatrick said that if the head had been near the 100th centile the Claimant would not have been able to hold his head up as in the photograph. I do not accept this. I believe Mrs Kirkpatrick was making an honest

(examination 13th November 2012); also, the evidence of the other expert witnesses. I will deal with their evidence separately below.

Mrs Furmage's witness statement – visits 10th July 2012 and 8th August 2012

110. Mrs Furmage had been a community practitioner (health visitor) employed by the Defendant since March 2010. Unsurprisingly she does not recall detailed events of the Claimant's examination and therefore bases her account on her usual practice and the health visitor records.

111. 10th July 2012: in her witness statement Mrs Furmage says that she measured the Claimant's weight as being 3.4 kgs, (she explained that this was an error. In fact it was 3.14kg). This was a good gain and she noted that it was just above his birth weight of 3.12kgs. She then proceeded to measure his head circumference and recorded this as 35.2cms which plotted on the 25th centile. She then dealt with her general physical examination of the Claimant and discussion with the Claimant's mother of feeding etc and immunisation. She also assessed the home environment. She felt that XM was growing well with safe and loving parents who were meeting all his needs. At the end of her visit she detailed that the Claimant had gained weight well, and that he would benefit from a further health visitor assessment in 2 weeks' time, so that he could be re-weighed and his oral thrush and circumcision site would be reviewed. She created this review and assigned it to the nursery nurse, Sharon Makwana, to complete.

112. 8th August 2012: Mrs Furmage said in her statement that she discussed feeding again with the Claimant's mother. She measured the Claimant's head circumference which was recorded at 38.3cms, which she described as "on the 50th centile which was a steady gain from his primary visit on 10th July 2012." Apart from a recommendation about the Claimant's skin being a little dry, she did not notice any further clinical issues. She said that the parents were very relaxed, friendly and happy to engage in discussions. The Claimant's mother was confident in handling her son and was effectively talking and soothing him and she confirmed feeling physically and emotionally well. Mrs Furmage was satisfied with the assessment and made a further appointment for XM to be re-weighed on 20th September 2012. That was her last involvement in the Claimant's case.

113. In the light of events which happened to the Claimant in December 2012, Mrs Furmage, after expressing sorrow at the sad event, says that she believes appropriate steps were taken in relation to the Claimant's treatment and care in terms of assessment of head circumference and follow ups.

114. Mrs Furmage's statement continues:

> "15… I have reviewed the growth measurements I recorded on the primary visit on 10th July 2012 and the 6-week visit on 8th August 2012 and have plotted them again to further check the accuracy of my actions. In terms of the post-birth growth recordings, it is noted that XM's head circumference measured 35.2cms (on the 25th centile) on the 10th July 2012, however this

assumption, but not one based on evidence. The neurosurgeons did not give this evidence. I asked Professor Mallucci whether it was possible to make any assessment of the head weight. He could not do so.

> had grown to 38.3cms (on the 50th centile) by the 8th August 2012. The change is an upward increase of one centile band, which is considered to be normal variation and this change would not have warranted a referral for XM to see a GP or to suggest to me any acute illness emerging to warrant further monitoring. Furthermore, a 3-cm increase in one month is an expected post-birth post change.
>
> 16… it should be noted that the crossing of two centile bands is the 'benchmark' variation which would trigger further review and assessment. In XM's case, this was not evident and therefore there was no indication to measure XM's head again by the health visiting service. This was not a requirement at the 4-month contact mark in accordance with the Standard Operating Procedure …
>
> 17. It should further be noted that in my career to date, I have never had any such measurements passed onto myself as the Family Health Visitor to compare and monitor against post-birth growth recordings, even where intrauterine growth retardation has been identified.
>
> 18. In addition to the Health Visitation Service, XM was reviewed by his GP and his parents actively encouraged and reminded by the health visitation staff to see their GP for XM's 6-8 week health review during which time further post-growth measurements would have been taken.
>
> 19. In terms of reviewing XM's weight gain, I have reviewed the notes and re-plotted them to assist in this case and confirm that XM's weight fluctuated from the 8th August to just below the 25th centile. This showed an increase of half of one centile band, which is consistent with the head circumference gain.
>
> 20. When reviewing a child's growth, my practice has not changed from that of 2012 and I continue to document measurements in the Personal Child Health Records, showing and discussing these with parents during the visit. If there were changes which alerted me to consider further monitoring, I would have explained these reasons to XM's parents and put an agreed plan in place. In view of the measurements and consistency in the growth charts recorded, this did not lead me to believe that XM had any acute illness or a need to re-measure nor discuss with his parents a wide range of growth issues…"

Mrs Furmage: cross-examination

115. The cross examination of Mrs Furmage was extensive and covered a number of topics.

Records – SystmOne

116. Mrs Furmage explained that SystmOne was a system used by both the health visiting team and general practitioners. Some general practitioners might allow the health visitors to see everything, some nothing, some (for example) just the records of matters such as immunisations rather than the GP examination entries. She agreed with paragraph 29(11) of the Defence which states that the fact that the 6-8 week GP appointment had been missed should have been recorded in the child health electronic system and the GP should have had systems in place to identify missed appointments and the need for recall. In the Defendant's Part 18 response it was confirmed that SystmOne is a secure centralised medical software system which contains access (modules) for every health care setting from primary care to hospitals, special care and mental health. This system provides clinicians and health care professionals with a single shared electronic health record available in real time at the point of care. SystmOne data can be shared across services. Mrs Furmage said that the Trust was responsible for SystmOne.

Records – Health Visitor Access

117. Mrs Furmage said there could be multiple records. Whether the health visitor could see all the GP records depends on the GP preference. Where she works now in the North East of England she estimated that under 50% of the general practitioners would not share their records. There were concerns by some general practitioners prior to the new data protection regulations but those regulations have endorsed the position. She did not recall the situation in 2012. She was taken to the passages in the HCP at pages 12-13, 18-19, 23 and annex B. She said that she did the new baby review at 14 days and the health visitor component of the 6-8 week examination. The health visiting team makes decisions on their own actions and the general practitioners on theirs. They would share information if they were concerned. Thus, the information was logged separately and shared as the need arose. If there was not a totally integrated system with GPs, as appeared to be the case with XM, she did not know what she did not know as regards to the GP entries. She would not have seen missed GP appointments on the SystmOne. She said that the health visiting team worked alongside the GPs but the GPs were responsible for managing their own system. The health visitors were not at liberty to tell the GP how to manage their services. She was insistent that her job was to coordinate only the health visitor component of the HCP. She said she could not coordinate all the professionals who were not part of the health visitor team. Mrs Furmage said it was not for her to ring round to check that all the appointments with midwives, GPs and community nurses were kept. She only coordinated the parts of the HCP in which she had a contribution and over which she had control.

118. When asked about page 72 of the HCP, namely giving clear information to the families about the roles and responsibilities of each practitioner with whom they came into contact, Mrs Furmage said she would talk to them about her role and promote contact with the other services.

Responsibility for 6-8 week check

119. Prior to 2010 Mrs Furmage was a health visitor in the North East. In 2010 she was given the Defendant's SOP and information about the HCP. She did not know what the Defendant did prior to 2009. She said that different Trusts dealt with the 6-8 week examination in different ways. Even in the Defendant's area, GPs dealt with the 6-8 week check in different ways. All children would be offered the health visitor

component. The GPs would offer their component. She accepted that the red book for the older sisters showed that at that stage the 6-8 week check would be done by a GP and not a health visitor. She said there was a time when health visitors were in the GP practice doing the 6-8 examination alongside the GP. Each would then do their own part of the examination. By the time she started with the Defendant there was a separate GP and health visitor component.

120. In the Claimant's red book it stated "6-8 week review. This review is usually done by your health visitor or a doctor." She said this was not right. The health visitor did their assessment and the GP did theirs. Sometimes the red book pages were not kept up to date. The red books were supplied by the hospital. It was never the case that the 6-8 week examination was just done by a health visitor. It was either the health visitor and the GP or just the GP.

121. Mrs Furmage said that she was sure that she reminded the parents of the need for the GP health check component. She did not rely on what had happened before in relation to their other children. Services change all the time. She did not know what experience the parents had had with their older children. Time had passed on since then. It was important that she made sure the parents were aware of the need for the GP check. She wrote it in the records that she had advised them.

122. Mrs Furmage was not aware of a system for the health visitor to be informed once the GP 6-8 week check had been done.

123. Mrs Furmage was shown the Claimant's red book. She confirmed that there were three blank sheets in relation to the 6-8 week check. The red book says that the top copy stayed in the red book, the second copy should go to the health visitor and the third copy to the child health department. She said it was good practice to share the information. It would be a positive thing if the second copy was sent to the health visitor coordinating and monitoring delivery of the HCP. She would have then known that both components of the 6-8 week review had been done. This would require the red book to be presented to the GP, the GP completing it and then the GP sending it to her. She said that the GP practice does not always send the red book copy if they have completed the examination. On a subsequent visit, when looking at the red book, it was not up to the health visitor to scrutinise whether the Claimant had missed a GP appointment, but they may choose to note this. Later she said that if the health visitor became aware that the GP visit had been missed, she would propose to the parents to make an appointment. She said there was no duty on the health visitor team to do that. The duty remained on the GP. She did not know if the Defendant saw it as their function to coordinate whether the GPs had done the check. Mrs Furmage said that the Defendant wanted all babies to have the 6-8 week check. They promoted participation in the HCP. If they noticed the check had been missed they would advise parents to ring the GP to see if the window of opportunity had passed. She would do that even if the baby had reached the 16 week visit stage.

124. On the SystmOne entry for her visit of 8th August 2012 Mrs Furmage had entered a code which she said was a "read code". That is the way that administrators can tell if the 6 week health visitor check had taken place. They could access the computer and get information as to the numbers who had had the health visitor 6 week check so as to assess how many children had received it. She did not know how the GP services would enter on SystmOne information about their check.

125. Mrs Furmage said that an administrator (Sharon Atwell was given as an example on the documents) had the right to access SystmOne and subsequently could scan in documents. For example, she had done this on 12th February 2013. If the GP had sent a carbon copy to the health visitor team then Mrs Atwell or another administrator would scan it into the SystmOne. Mrs Furmage was not aware if the medical component of the 6-8 week check had a read code.

Mrs Furmage as Named Health Visitor

126. Mrs Furmage was asked about pages 4-6 of the SOP. She confirmed that the SOP had been produced by Mrs Chessman who would have expected the health visitors to work within the document. She was pressed on the point that according to the SOP she was responsible for coordinating and delivering the HCP. She did not accept this. She said she could only coordinate that for which she was responsible. The document was guidance. She added that she was busy coordinating her own role and could not coordinate everybody else's role. She said she was only responsible for delivering the HCP component and not the whole programme. Her own responsibility at the 6-week contact was to remind the parents of the 6-8 week GP appointment. After that she had no duty of care in that regard.

127. There was some confusion about when Mrs Furmage left the Trust. At first she thought it was probably about the end of October 2012. It was suggested that while she was the Named Health Visitor she had overall responsibility for the health visitor team pursuant to page 6 of the SOP. In particular there is reference to the fact that even if a second health visitor took responsibility for some specific episode of care "the overall responsibility of the case remains with the Named Health Visitor." She said that she may have left the Trust by the time Mrs Kirkpatrick visited on 15th October 2012. She was not clear about the date. She said that if somebody leaves then it is not always the case that a child is given a new Named Health Visitor. If any issues arose then the child would have a new Named Health Visitor but, if not, the child may not have a new Named Health Visitor assigned. Parents could also seek a new Named Health Visitor if an issue arose. She accepted that, then and now, that could leave a number of children without a Named Health Visitor.

128. Mrs Furmage was asked to explain the entry at page 7 of the SOP in relation to the 6-week contact where it said that this may only be delegated "between HV and GP." She said it was not very well worded, but she thought it was to make clear that that particular review could only be done by the health visitor and/or the general practitioner. She was also asked about the "rationale/evidence" on page 18 of the SOP dealing with the 6-week review. The section says "to ensuring growth along expected centile lines in relation to growth potential and earlier growth measurements." She read the words "in relation to growth potential" as requiring overseeing that the child is growing well and there is not a failure to thrive.

Head Circumference Measurements

129. Looking at the head circumference measurements plotted on XM's red book, Mrs Furmage said that she would expect to see a birth measurement plotted if it had been taken. She accepted that the child should be weighed and a head measurement taken at birth. This should be in the red book. She said that most of the time there would be a birth measurement entry. The hospital had not put the entry into XM's red book. Mrs

Furmage said that most babies have a birth measurement recorded. Birth measurement is not an exact science. She had no way of knowing what XM's birth measurement was.

130. Mrs Furmage stood by the evidence in her statement that 3 cms growth in head circumference in one month was expected growth change. She said that what was important was plotting on the centile chart. Before plotting and from taking the measurement she could have an idea of the significance of the measurement, but she could not interpret it until she plotted it on the centile charts. She said that a 3 cms increase was within what was expected because XM had gone up one centile band. He was a thriving child who was feeding and growing well. Therefore, his brain would be reflected in his head size and an upward growth shift of one centile would not cause concern. She expected a child's centiles to fluctuate and XM's did not change more than she expected. She said that she did measurements of children day in and day out. There was nothing in XM's measurements that alarmed her. She saw movement of a full centile space between 2-6 weeks fairly regularly.

131. If her findings were within a normal range she would not think about future head growth. She accepted that the advantage of the birth measurement was that one could see a growth between 0-6 weeks. Nevertheless, a one centile growth between 2 and 6 weeks was not unusual. It was pointed out to Mrs Furmage that on the WHO document about using growth charts, the suggested measurement was "around birth" and at the 6-8 week check. It was suggested that all she knew was that he had crossed a centile between 2 and 6 weeks i.e. within 4 weeks. She did not know what the position was over the period referred to in the WHO document i.e. between around birth and 6 weeks. She accepted this. Nevertheless, she said that within the measurements she had, at 2 weeks and 6 weeks, XM's rate of growth was acceptable. She stood by her description of the head growth as "steady gain". She said there was nothing to cause her to suspect that his head growth would grow faster than expected. She had to take the measurements she had on their merits and against any previous measurement. There was nothing alarming about her 8th August 2012 measurement.

132. At 2 weeks XM was on the 25th centile. At 6 weeks he was just above the 50th centile. In relation to the rationale/evidence in the SOP for the 6-week contact where it states, "to ensuring growth along expected centile lines", Mrs Furmage said that she would review the old measurement(s) against the new measurements. The baseline here was that XM was on the 25th centile at 2 weeks.

133. XM's sister's red book, her date of birth being in October 2008, was put to her. There it states: "a normal growth curve is one that always runs roughly on/parallel to one of the printed centile lines." She said that that was the guidance at the time. She thought that there was a change by the time of XM's birth because people distinguished between the type of feeding of the baby. She said about 50% of children in her experience had a wide range of variation.

134. Mrs Furmage accepted that, if the head measurement had crossed two centile spaces the growth would be more rapid than expected and would not have been described by her as "steady". Had that happened she would have made a GP appointment and organised her own re-measurement. That would be the case if a child crossed two centile spaces within the first 6 weeks, or at any stage. She was asked what if XM had

crossed one centile and then gone half-way into the next centile. She said in that circumstance she may have reviewed in 4 weeks.

135. Looking at the Claimant's red book, Mrs Furmage confirmed that the Claimant's head circumference at 2 weeks was 35.2cms and at 6 weeks 38.3cms. Therefore, it had grown 3.1cms in a month. She accepted that if he had continued to grow at that rate, then at 10 weeks it would have been 41.4cms which looked like being just over the 93rd centile at 10 weeks. She said that would be a jump of two centiles in that period. That would have been significant. As far as she was concerned, when she examined him, her reassurance was that in the period 2-6 weeks of age the Claimant had moved only one centile space. Therefore there was no concern about future growth. She had to make an informed decision on the measurements which had been taken. She had to interpret the measurements taken. Centiles were a guide and children's growth varies. Her job was to leave the child in a safe position. She said she was not expected to predict expected changes. She had the Claimant's weight chart and two head measurements. As far as weight, he was born on the 25th centile and between 2 weeks and 6 weeks his weight had gone up half a centile. However, if she looked at Mrs Makwana's erroneous 4-week plot, it would appear that his weight had dipped. In any event, at 6 weeks he was tracking within one centile space, between the 9th and 25th centile. His weight therefore showed a steady growth pattern. As to the fact that his head had gone from the 25th to just over the 50th centile, Mrs Furmage said that both the head and the weight showed upward movement. The head, during that period, had grown half a centile space more than the weight. It did not grow more than two centile spaces and therefore it was not significant. Growth of two centile spaces warrants referral to a GP and follow up. If there is growth of two centile spaces and a child is unwell she would suggest that he went straight to hospital. Indeed if the child was unwell, then regardless of centile growth, she would refer him to the general practitioner.

136. If the Claimant's head measurement had shown growth close to two centiles i.e. just under two centiles then, given that he was a well child, Mrs Furmage would have re-organised a re-measure and asked the patients to see the general practitioner in the meantime if they had any concerns. She would suggest a re-measure in about 4 weeks' times but she would discuss with the parents if they wanted it earlier.

137. Mrs Furmage was taken to the Hall textbook. She said her present office has a copy. She would have been referred to it in her general training, and in her growth training, when she joined the Defendant in 2010. With reference to that textbook Mrs Furmage accepted that routine measurements take place at birth and 6-8 weeks. She accepted also that there was a concept of "normal growth" so as to identify what is not normal growth. In relation to the third bullet point in the sub-heading "Head circumference"[27], she referred to the fact that "crossing centiles upwards" meant crossing two centiles if the child did not show symptoms. As regards the last bullet point, she accepted that there was no pass or fail in just taking a head measurement. As regards the sub-heading "Audit", she said she was not involved in knowing how the Defendant explored the data they collected.

[27] Hall textbook page 188.

138. Mrs Furmage did not accept that the minimum time period for assessing head circumference growth was 6 weeks. She said the textbook did not say that.

139. She was referred again to the WHO document which says that "head circumference should be measured around birth, at the 6-8 week check …" She said that the document did not say there was a minimum 6-week window. She said that the determining factor, regardless of the time period, was crossing two centile spaces. She accepted that 3cms in 6 weeks is less rapid than 3cms in 4 weeks. Later she was asked what the minimum period of time was to safely assess the growth of the head. She reiterated that it was not about time periods. She said she felt she safely assessed growth in the 4-week period between 2 weeks and 6 weeks. In re-examination she was referred to page 13 of the WHO document which says "head circumference centiles usually track within a range of one centile space. After the first few weeks a drop or rise through two or more centile spaces is unusual (fewer than 1% of infants) and should be carefully assessed". She said that that showed that the time period was not mandated.

140. Mrs Furmage was referred to paragraph 18 of her statement where it says that during the 6-8 week GP review "further post-growth measurements would have been taken". She said that it was up to the GP whether such further measurements would be taken. Paragraph 18 perhaps should have said that they "could" have been taken. Some GPs repeat the health visitor's measurements. She did not know what the Claimant's GP did at the time. She was not suggesting that the GP was a safety net in case she made a mistake. She did not believe that the Claimant's rate of head growth needed to be assessed over a 6-week period. She was asked that if the Claimant's head had grown 1.5cms (i.e. at the same rate as in the preceding 4 weeks) between weeks 6 and 8 then it would have been 39.8cms and that would plot on the 75th centile. She commented that that exercise was plotting just on the figures. She had to make an assessment on her measure. She did not predict the future. She said that she would still find one centile space in a month not a concern and not alarming, even at today's date.

141. She was asked about the paediatric neurosurgeons' (then) agreed estimated growth chart for the Claimant and asked whether she would not be thereby exposing the Claimant to a risk of this happening. She said that the Claimant was seen on multiple occasions by health professionals. The journey all along the time frame was one of a well child. Even 2 weeks before the brain tumour diagnosis, general practitioners did not identify that his head was enormously out of proportion.

Mrs Sharon Makwana – visits 24th July 2012 and 8th October 2012

142. Mrs Makwana has worked for the Defendant since November 2002. In 2012 she was employed as a Community Nursery Nurse. She is still employed in that capacity. She says that the work of a nursery nurse is a delegated role. Specific work is allocated by the health visitor in charge. She based her evidence on trained practice together with the records provided to her.

143. Mrs Makwana has worked in childcare since the 1980s. She obtained a Cash diploma in childcare. This was the qualification in the 1980s for nursery nurses. She worked in education and day care before starting to work in the health visitor team in 2002, employed by the Defendant. She is not a qualified nurse.

144. Mrs Makwana said that for whatever changes took place she received relevant training, and that the Defendant was very hot on training. She was familiar with the Defendant's SOP and with the WHO document. She said she would have had the training referred to on page 18 of that document.

145. Mrs Makwana had no recollection of seeing the Claimant's older sisters. She accepted that the notes showed that she saw YM once on 17th November 2010 for a two-year, one-month review, and ZM four times between November 2010 and February 2011. She said that if the visits were at the same home it is possible she may have had a sense of the family when she saw the Claimant in 2012. She may also have remembered the parents. At this point she had no recollection of them.

146. Jo Chessman was the clinical team leader at the time. She was Mrs Makwana's ultimate manager. Mrs Chessman is still employed by the Trust, though in a different department.

147. Mrs Makwana did not know until recently that the Claimant was brain damaged. She found out probably shortly before she made her statement on 23rd January 2019. It was a big shock to her when she found out about it.

24th July 2012

148. On 10th July 2012 Mrs Makwana was assigned a task by Mrs Furmage to undertake a follow-up assessment. She noted that the Claimant would require a review for oral thrush and examination of his circumcision site. She did not receive a request from Mrs Furmage to measure the Claimant's head circumference either at her first visit on 24th July 2012 or her second visit on 8th October 2012.

149. Mrs Makwana said she visited the Claimant at home. She physically examined and weighed him, recording his weight in the red book as 3.7 kgs. His weight was noted as being back up to the 25th centile and he had good muscle tone and skin. The previous notes showed that the Claimant had signs of oral thrush, but she felt that this had resolved and the circumcision site was also clean. She discussed breastfeeding with the Claimant's mother. She observed that the Claimant was very settled and calm. She had no concerns about him. Her parenting capacity assessment was carried out and she noted that both parents were warm, loving and capable of safe handling. She says that she documented the Claimant's progress on his growth chart and reminded them of his 6-week follow up assessment scheduled on 9th August 2012. On completion of the visit she returned the completed task to Mrs Furmage via the e-mail based task system.

150. Mrs Makwana was questioned carefully about the 24th July 2012 visit. These were the salient points which came out of her cross examination:

    i) The Claimant's birth weight on his red book was recorded at 3.12 kgs.

    ii) When Mrs Makwana plotted the Claimant's weight she plotted him as being on the 25th centile. However, she accepted that she had plotted him at about 3 weeks when in fact he was 3 weeks, 6 days old. She said that he would have been the other side of the 25th centile line had she plotted him nearer to 4 weeks. When in her note she said that he was "back up to the 25th centile", that meant

that he was back to the 25th centile at birth rate. However, on the birth weight of 3.12 kgs she could not say what the birth centile was.

iii) She would enter the Claimant's date of birth and weight onto the SystmOne computer as soon as she got back to the office. The computer would be programmed to a 7-day week. The age and gender are pre-programmed. Looking at the Claimant's SystmOne weight chart, there are two dots plotted between zero and 2 months. She was not sure which dot was her visit; however, both on the computer are just above the 9th centile. She accepted that the text in the red book was inconsistent with what was plotted on the computer. She said she would have taken the carbon copies from the red book back to the office. She would have typed up her notes from the red book onto the SystmOne. The red book says "naked weight 3.70 kg ... back up to 25th centile. Good gain." The SystmOne entry says "O/E – weight … 3.7 kg … very good gain, up through 25th centile… good gain back up to the 25th centile."

151. It seems to me on the balance of probabilities that what happened was that Mrs Makwana plotted the Claimant's age at 3 weeks rather than nearer to 4 weeks. She then made her notes in the red book and on the computer system from her red book entry and plot. Although she accepted she ought to have made her record on the basis of what the computer told her, that being more accurate, she did not do this. The computer would have shown that the Claimant was nearer to the 9th centile. The parties agree that the weight was above the 9th and below the 25th centile.

8th October 2012

152. Mrs Makwana was again asked to carry out a home visit and a weight assessment, as no clinic appointments were available. She recorded XM's weight at 5.72 kgs, which she felt was very good and consistent with healthy growth. She discussed feeding again. The Claimant was vocalising and appeared happy, settled and alert, with good skin and muscle tone. There were no concerns about environment and Mrs Makwana was satisfied that the Claimant's parents were anticipating his needs. When she concluded her assessment, she wrote up her notes and that was the end of her involvement with the Claimant and his family. In cross-examination Mrs Makwana said that at this visit she looked at the red book. The Claimant was tracking fairly consistently for his weight on or about the 9th centile.

153. Mrs Makwana said she would have looked at the Claimant overall. She did not do head circumference measurements. That was a matter for the health visitor. It was not her role. If the parents had said they had been worried about the size of the baby's head she would have contacted the health visitor or the GP. She had not measured head circumference since about 2002.

Visual head size at 8th October 2012

154. Mrs Makwana said she would do general visual checking of the baby. It was put to her that on the agreed neurosurgeons' estimate of the Claimant's head size as at 8th October 2012, his head would have been on or over the 98th centile. She said she would have noticed this had that been the case. She would have definitely spotted a large head like

that. She would not have missed visually a head that large. She would have acted upon it. She added that the Claimant was alert, happy and starting to vocalise. She believed there would have been signs of a problem had his head been that size on her visits. She accepted however that she was not an expert in that regard.

Mrs Sharon Kirkpatrick – assessment dated 15th October 2012

155. Mrs Kirkpatrick was the attending community practitioner (health visitor) who assessed the Claimant on 15th October 2012.

Written evidence matters

156. Mrs Kirkpatrick had been willing and able to provide the Defendant's solicitor with information surrounding the case, but had not provided a formal statement. Based on the information she provided to the Defendant's solicitors, the Defendant made an application in February 2019 to serve a witness summary of the evidence of Mrs Kirkpatrick. The application was not opposed and the summary was therefore served. In accordance with Civil Procedure Rules, rule 32.10, the Defendant was therefore entitled to call Mrs Kirkpatrick. A few weeks prior to the November 2019 hearing, Mrs Kirkpatrick provided a witness statement which she signed. That statement was served upon the Claimant on or about 12th November 2019. The statement was undated but was made on 5th November 2019. An application to rely on it was served on 20th November 2019. In the event, both the witness summary and the statement were in evidence and Mrs Kirkpatrick gave oral evidence. For logistical reasons she was the first witness to give evidence in the case.

157. In the application to rely on a witness summary, an associate solicitor, Ms Lisa Spencer, made a statement dated 22nd February 2019. In that statement she said that Mrs Kirkpatrick *"…had worked for Leicestershire Partnership NHS Trust at the time of the alleged negligence …*" and *"…while Mrs Kirkpatrick was willing and able to provide Weightmans with information surrounding the health visits, she was and is not willing to provide a formal statement to give evidence at trial, despite all reasonable requests from Weightmans and the Trust"*. Later the statement says *"following further correspondence sent to Mrs Kirkpatrick on 9th August 2018 (in order to now finalise her witness statement), contact was made by Mrs Kirkpatrick to Mrs Sarah Mather, paralegal, on 13th August 2018. This conversation was brief and Mrs Kirkpatrick advised that she had provided all the information she could to assist with the investigation. Mrs Kirkpatrick was asked regarding a witness statement and firmly declined to provide a formal witness statement and stated that she would not be prepared to give evidence at trial. She was very clear that she would not co-operate with this and that she was not to be asked again. Mrs Kirkpatrick was also invited to attend a conference with counsel; however, this was also declined and Mrs Kirkpatrick reiterated that she did not want to be involved in the civil case."* There is further evidence about attempts being made to seek Mrs Kirkpatrick's co-operation in providing a witness statement with the conclusion that she continued to refuse to provide one.

158. Mrs Kirkpatrick was asked about these matters. She said she had always worked for the Defendant. She has worked for the NHS and the Defendant Trust (albeit in previous incarnations) since 1978. She worked for the Defendant on a contractual basis. At the time of being asked to provide a witness statement she was travelling in Cambodia. She

believed that the witness statement from Ms Spencer was based on a misunderstanding. She gave a witness summary because she was in Cambodia. She had always been keen to give a witness statement. She did not agree that at any time she did not want to get involved. She was asked when she came back from Cambodia and said it was in 2018. She was only there for a few months. She had not been there in 2019. The effect of the Claimant's brain damage was first brought to her attention some three years ago. She did not know about it in 2013. She believed it was about three years ago (i.e 3 years prior to November 2019) that somebody contacted her to ask her questions.

Background

159. In 2012 Mrs Kirkpatrick was an employee of the Defendant's Partnership Trust bank. This meant that were they short staffed she would be asked to help for differing periods - for example, a few months or even a year or two. She believed that Joanne Chessman was her manager at the Trust in 2012. She confirmed from the document that the SOP had been written by Ms Chessman. She agreed that she would have been familiar with that document at the time. She would have also been familiar with the WHO document. She remembered the Government introducing the WHO growth chart, but she could not remember the year. She said they would have had training on that.

160. Mrs Kirkpatrick has the following professional qualifications: Registered nurse, registered midwife, health visitor with distinction, nurse tutor and Bachelor of Arts in Nursing Practice.

IUGR – Witness statement paragraph 10

161. In paragraph 10 of her witness statement Mrs Kirkpatrick said that she would have noted that XM was 40+1 weeks at birth, that he had IUGR - intrauterine growth retardation - and was an induced normal delivery. She said that as a midwife she would have particularly noted the IUGR. She was asked where she had seen this. She said that she did not know but she had read it somewhere recently. Apparently, she had been sent all the bundles of expert and lay evidence in the case, as well as the base documentation. She said she had no recollection about the IUGR at the time. It may have been something she had read recently if it was not on the documentation she had in October 2012. She said she had typed her own statement. She also said that at the time she of her examination in October 2012 she would not have had access to general practitioner records. It seems probable that the reference to the IUGR was something which she did not know about at the time, but had seen only recently when she made her statement.

Practice and Procedure at and prior to 2012

162. Mrs Kirkpatrick had no recollection of the Claimant's case. Her only interaction with XM was on 15th October 2012 when he attended a child health clinic with his father. In her witness statement she describes in some detail her normal practice.

163. Miss Gollop QC asked questions about procedure and the circumstances obtaining at and before 2012. In summary Mrs Kirkpatrick said:

    i) She thought that it was always a requirement to measure head circumference at 10-14 days. This was not just after 2009.

ii) In 2012 a baby had a named health visitor, though the named health visitor would not see the baby every time.

iii) At 6-8 weeks there would be reviews by the health visitor and by the GP. She believed that this had always been the case, but she could not remember. She said the two reviews were usually done separately. However, some GPs would do all the measurements themselves and some would take the measurements from the health visitor. That was her experience.

iv) The Defendant was responsible for health visitors. Some were attached to GP practices. Some were not.

v) As regards Children's Centres, the Government had set them up as designated areas for developmental checks, toddler groups etc. They used a different building from general practitioners, though perhaps some were attached to a GP practice.

vi) The position with the red book and SystmOne was that an entry would be made contemporaneously with the examination in the red book. The parents would keep the red book. She would detach a carbon copy and use that for making up the SystmOne note. Sometimes that had to be done the following day if, for example, other people wanted access to the computer or there was a Wi-Fi problem or she might be running late etc. Her computer entry regarding the 15th October 2012 visit had been made the day after the examination. She said that was acceptable as long as the entry was on the computer within 24 hours. The information in the red book and SystmOne should be the same, but sometimes there would be a little difference because there is more detail on SystmOne. In that sense SystmOne should be more accurate. The red book was more of a summary. After the carbon copy has been used to make up the computer record, it is shredded.

15th October 2012 - general

164. When Mrs Kirkpatrick checked through the baby's records prior to her consultation she would not have the red book, so she would look at the computer records. She would be able to see the growth charts which were already on the computer record. She would not normally look at them if there was no concern at the 6-week check. If people were happy with the 6-week check then she would not open the growth chart document. Normally she would be able to check the computer records; occasionally it might be possible that there would be a Wi-Fi problem in some Children Centres.

165. Mrs Kirkpatrick was asked about the fact that in the red book there were no length measurements for the Claimant. She said she did not think they measured length. She knew that they had moved away from measuring length because of the problems about stretching a baby's legs.

15th October 2012 – Head Circumference Measurements

166. Whether on the computer and/or the red book Mrs Kirkpatrick would have noted that there was no birth head circumference entered on the graph. She said that it was a requirement to have the head circumference measured at birth, but it was not always on

the red book even if it had been done. More often than not the birth head circumference would be plotted. She was asked in re-examination to note that there was no centile line before two weeks. She did not know why this was case. She would have noticed that the head circumference at 2 weeks would have been on the 25th centile and at 6 weeks on the 50th centile. She said she would have had no concern about that because it is normal for a child to move across one centile space. It was only if the child crossed two centiles spaces there was any concern. Her witness statement said that on observing the centile records of XM's head circumference in the red book she would not have been "unduly concerned (my underlining)". She said that to her that was similar wording. She had no concerns; if she had a concern she would have done something about it.

167. Mrs Kirkpatrick was asked how she knew that in the period between birth and 6 weeks XM had not crossed two centile lines. She said that that was fair comment, but from what she could see she did not know that he had crossed two centile lines from birth to 6 weeks. She agreed that the purpose of the policy of measuring was that there should be three measurements i.e. at birth, 2 weeks and 6 weeks. It was a small minority who did not have the head circumference measurement at birth on the red book. She also agreed that the two measurements in XM's case at 2 and 6 weeks were somewhat unusual in that the vast majority of children will track along a centile line. She agreed with an earlier edition of the red book from one of the Claimant's sisters in 2008 where it states: "a normal growth curve is one that always runs roughly on/parallel to one of the printed centile lines." Nevertheless, she said that some children will move around within a centile space. In XM's case, absent any other concerns or symptoms, it was only if his 6-week head measurement had been on or above the 75th centile line that something would have had to be done. She did not do a head circumference measurement at 16 weeks because on what she saw XM was developing normally and she had no concerns. Her opinion was that not all, but the majority of, children with intracranial problems show symptoms. She accepted however that screening was in part to pick up asymptomatic problems.

168. Mrs Kirkpatrick did not accept any real significance due to the fact that XM's weight tracked between the 9th-25th centile. He was therefore of lower weight than at least 25% of children of his age. She said there are often fluctuations, dependant on whether children are breastfed or bottle-fed or both. The Claimant was both. She said that bottle-fed children tend to put on weight more. She said one cannot expect the centile for head circumference and weight to match.

15th October 2012 – Claimant's examination

169. Mrs Kirkpatrick was taken to the differences between her computer record and the red book record. Her red book record of her October visit states:

> "breast/bottle feeding – well – Aptamil. Vocalising, visualising, response to sound, good head control, lifts head in prone, moves arms and legs freely, follows …"

She had ticked the box "follow up required". The computer record states:

> "O/E – weight (22A, 6kg, 13lb 4 oz) – breast and bottle feeding well… Dad observed handling baby with care and confidence. Vocalising, following slowly, asked dad to bring to clinic to review following in 1/12, response to sound. Moves arms and legs freely, good head control, attempts to lift head in the prone."

When asked about these matters she said:

i) Although she said "follows" in the red book, it was probably the case that she thought he was probably following a bit slowly. That was why she ticked the box for follow-up in the red book. She had put a bit more detail in the computer records.

ii) Although it was not specifically stated that she saw the baby moving his arms and legs and lifting his head in the prone or attempting to do so, she would have had laid him on his tummy for him to lift from prone. She would also see him moving his arms and legs. This was the normal way of carrying out the 4-month review which all health visitors did. She would have had seen him visualising and would have checked his good head control by lying him on his tummy. She did not accept that there was any real difference between the red book and the computer record in that the computer record refers to "attempts" to lift head in the prone. She said that babies may be tired and not want to do things to order. She accepted that there is no suggestion of this in the records. She could not explain why, when she would have had the carbon copy of the red book entry in front of her, she wrote the entry slightly differently on the computer.

iii) Mrs Kirkpatrick was taken to Mrs Furmage's entry of 8th August 2012 where she recorded two ways of assessing head control. The first was on the tummy i.e. in the supine position and the second in central suspension which would be holding the baby up by the waist. She said that the latter would not be done at 4 months because a child has moved on. The head control test would be at supine at 4 months.

The Missed GP check at 6-8 weeks

170. Mrs Kirkpatrick was asked about the missed GP check at 6-8 weeks. She accepted that there would be three carbon copies incomplete in the red book. She said she would have noticed this. The fact that the carbon copies were in the red book did not mean that a patient had not had the check, because some parents sometimes do not take the red book to the GP. She said her routine would be to ask the parents if the GP check had been done. If the parents said they had not had the check done then, if the child was of no concern, Mrs Kirkpatrick said she would just say to the parents that the baby had missed a development check which was important. It would have been routine for her to have said this even if there had been no safeguarding concerns, as in the Claimant's case. She would not have said to go to the general practitioner, because at 16 weeks it would not be logical to send the child then for a 6-8 week GP check. She thought that if she had rung the GP she was almost sure they would have said no. She was not sure if she had ever rung a GP in those circumstances. Perhaps she had done if there had been concern about the development of the child, but that would not be to

have the 6-8 week check done but to check her developmental concerns. She did not think the Defendant had any method of recording if the GP 6-8 week check had been done. She agreed that there are aspects of the 6-8 week GP check that could be done at any age, but said it was not her responsibility to get them checked for those things. If she had had concerns, only then would she refer back but this would not be for the 6-8 week check. She said she knew from working with GPs they would not have taken a baby for a 6-8 week check once the baby had reached 16 weeks. Mrs Kirkpatrick did not accept that she would not have mentioned to the parents that they had missed the 6-8 GP check. She said there was a purpose in knowing, because if he had had it but they had not taken the red book, then they could pop in the red book the next time they went to the GP and get it completed. However, she would not do anything if the appointment had been missed; to that extent there was no purpose in knowing whether the check had been done or just not recorded in the red book.

Neurosurgeons' Projected Centiles

171. It is to be recalled that in her statement served shortly prior to trial, Mrs Kirkpatrick had said: "It would have been inconceivable that I would not have noticed an extremely large head above the 90th centile". In cross examination Mrs Kirkpatrick was shown the (then) agreed evidence of the paediatric neurosurgeons. They agreed that XM's head circumference at 16 weeks would have put him just under the 99.6th centile. She said she found that inconceivable because if his head had been that large she would have noticed it. That would have been one of the biggest heads she had ever seen. She would not have failed to notice a child with a head on virtually the 100th centile. She would have expected his head to have been between the 25th and 50th centile. She believed that that was probably where it was when she saw him. She said that even had he been on the 75th centile she would have been alerted to it by her visual examination. However, it is not uncommon that a baby may have a bigger head than the baby weight would suggest or to see a largish head on a smallish body. Nevertheless, if the baby's weight and the head had both been near the 100th centile that would flag up a potential problem. At the end of her evidence I asked her whether there was anything she would want to say about this discrepancy between her evidence and the (then) agreed evidence of the neurosurgeons. She referred to three matters:

    i) If the head had been near the 100th centile there was no way the baby would have held his head up;

    ii) She said she believed she had seen a photograph which was taken a few weeks after where the baby was holding his head up and that would not have been possible;

    iii) She said she believed there would have been signs and symptoms of hydrocephalus had he been on the centile agreed by the neurosurgeons.

172. Mrs Kirkpatrick relied on her visual inspection and the baby's head control for ascertaining that he had not gone through another centile. Although it would have only taken moments to measure the head circumference, some parents are concerned by too much head circumference measuring. Mrs Kirkpatrick would only measure it if she felt the need to do so. However, had she felt the need to do so she would have done it despite the parents' possible concerns. She emphasised that she was very passionate and committed health professional with a great deal of experience.

Jacqueline Hewitt – examination 13th November 2012

Background

173. In November 2012 Mrs Hewitt was a community nursery nurse employed by the Defendant. She began in this role in September 2009 and ended in June 2015. She had previously worked in the childcare and education sector for some 18 years. As with Mrs Makwana, she says that her role was a delegated role. She was one of three community nursery nurses allocated to specific work by a team of health visitors. She explained that she had an NVQ in child care and a Foundation Degree. She had first been contacted about the Claimant's problems about a year ago. She was not aware at the time that he had suffered brain damage, despite there being a record on 10th January 2013 from a Ms Yianna Linthwaite (a Health Visitor in the Team) that she knew about the Claimant's situation, and that she had told the Claimant's mother that the team were thinking of the family and would keep in touch. Mrs Hewitt said it was possible that she would not necessarily remember even if she had been told nearly 7 years ago.

174. At November 2012 Mrs Hewitt had had more than three years' experience from joining the Defendant in September 2009. She had had training from the beginning and ongoing. Before she had been allowed to go out by herself, she had been assessed by other professionals. That would have been for some weeks after she started. She therefore had about three years of doing visits on her own.

175. Based on the records she could see that the health visitor requested she visit the Claimant at home to review his weight and "following." The Claimant had previously been seen by the health visitor and she, Mrs Hewitt, would not be looking for anything else other than the tasks delegated to her, although had any other matters of concern come to her attention she would have noted them.

13th November 2012 visit

176. When she visited the Claimant, his mother was present. He was then 19+ weeks old. He was undressed to be weighed and good tone and progressive weight gain were noted. His weight was recorded as 6.74 kgs. This put him on the 25th centile. There was discussion about food and feeding. The Claimant's mother had not started weaning but was going to at age 6 months. The records show that the Claimant was a very settled baby and was alert, responsive and vocal. He was smiling, fixing and following well. The only two issues of note reported by his mother were that he was regularly experiencing watery eyes and had some areas of dry skin. Mrs Hewitt advised the mother to monitor the watery eyes and to contact the GP if she remained concerned. As to the dry skin, the mother confirmed that she had previously been given a bath oil prescription for eczema by the GP but she had run out of this. Mrs Hewitt advised her to contact the GP for another prescription. The records show that the Claimant's mother was warm with the Claimant and affectionate with her interactions and confident in her handling of him.

Neurosurgeons' Projected Centiles

177. Mrs Hewitt was asked about the (then) agreed evidence of the paediatric neurosurgeons. On their plotted chart it suggests that as at 13th November 2012 the Claimant was about 1.5 cms off the chart. His head circumference would have been about 47 cms and the chart at 20 weeks ends at 45.5 cms. She said she was there to do a particular piece of work. It was not obvious to her that there was discrepancy between the head and body size. She said children have different sizes and shapes. It would not necessarily have been obvious to her. She was there to weigh the child. There was nothing to make her concerned. However, she added that if the Claimant had had a very large head she would have noticed it. He was presenting well. All visits are holistic. She spoke to the mother. That she looked at the head was apparent from her entry about his eyes. She said that if there had been anything obvious about his head she would have noted it.

178. Mrs Hewitt accepted that part of the child's weight would have been his head. If the chart was right then the baby would have had a very large head. He did not present as having an overly large head. She ventured that nobody could say what his head size would have been at that time. Mrs Hewitt would have looked at the previous weight charts for the Claimant only. She would not have looked at his head measurement charts. She was concerned with XM's weight, unless she had any particular concerns about the head.

179. Mrs Hewitt said that head circumference was for health visitors. She was not sure she had had training about the head size of infants. She had had no formal training about measuring head circumference, but in the past had seen Claimants with disproportionately large heads and bulging heads. She said she thought she would have noticed, nevertheless, if the Claimant's head had been as shown on the neurosurgeons' chart. Part of the assessment was observing the child, fixing and following with his eyes and holding his head. There was normal development and therefore no concerns, although that would not stop her from noticing if he had an abnormally large head. She did not think it was a real possibility, because the Claimant looked well and seemed to be developing normally.

Waters/Gooch: up to 8th August 2012; joint statement

180. The experts agreed that, according to the chart in SystmOne, a whole centile space was crossed upwards. This was in the period 10th July 2012 to 8th August 2012. Mrs Waters was of the opinion that the growth line, as calculated by the computer, crossed from below the 25th centile to above the 50th centile, which she said was across two centile lines. Ms Gooch said that, had the data in question been plotted at the time (which did not occur), one centile line was crossed, as the head circumference at 2 weeks would have been on the 25th centile. She said that what was crossed was marginally more than 1 centile space, but this did not have clinical significance.

181. As to Mrs Furmage's description of the head circumference growth in this period as "steady gain", Mrs Waters said that a steady gain would have shown a head circumference growth remaining on or about the 25th centile and that 3cms was a large gain in 4 weeks. Ms Gooch said that "steady gain" is more usually applied to weight gain. When the term is used by health visitors it is intended to signify that the measurements are unremarkable and reassuring, as indeed they were. Mrs Waters considered that, when the weight and head circumference graphs were compared and contrasted, there was a remarkable divergence in the shape of the curves. Ms Gooch

disagreed. She said that the Claimant, having been born on the 25th centile for weight, lost weight as expected in a breast-fed baby, being on the 15th centile at 1 week old and below the 15th centile at 2, 4 and 6.1 weeks of age. She said that the change in the head circumference from the 25th to 50th centile between 13 days and 6.1 weeks was not a remarkable divergence.

182. Further Mrs Waters said:

i. It was important to compare and contrast the head circumference growth and weight growth charts.
ii. The fact that the weight stayed on or above the same centile while the head circumference increased across two centile lines and then an entire centile band was a cause for concern.
iii. She referred to a study[28] which she showed that the measurement of maximum head circumference must be part of the routine examination of any baby. It must be related to the size of the baby and the weight was a good index of this. She said that the results of the study showed that it was immediately possible to determine the expected head circumference for a child given sex, age and weight.

183. Ms Gooch said a competent health visitor would not expect there to be a direct correlation between weight and head circumference. Head circumference in a healthy infant in the first few weeks of life does not always or usually follow exactly the same centile line. The paper referred to by Mrs Waters is over half a century old. The correlation between weight and head circumference was not taught to health visitors in 1987-1988 when she herself qualified; nor was it taught in the 21st century when the Claimant was born.

184. Therefore whilst both experts agreed that if two centile spaces are crossed then a referral for medical review is mandated, Mrs Waters' view was that the change in head centile in this case, particularly in light of the weight growth, was a cause for concern and mandated further monitoring and measurement. Ms Gooch said that in the absence of any other signs or symptoms, the baby's weight being an irrelevant consideration, only if the two measurements of the head circumference are two centile spaces apart or more should the head circumference be measured again within the next 4 weeks.

185. The central issue as of 8th August 2012 was whether there was reason for concern about the Claimant's head circumference measurements taken by Mrs Furmage on 10th July 2012 and 8th August 2012. Ms Gooch said there was no cause for concern. Mrs Waters said that the difference in head circumference was something which she would have expected Mrs Furmage to have informed the parents about as something which was not something as a cause for worry, but which needed to be monitored so that the pattern of growth could be established. She said that the parents should have been told that the Claimant's head needed to be measured again when he was 8 weeks old and 10 weeks old.

Waters/Gooch: missed 6-8 week GP check; joint statement

[28] Illingworth R S and Lutz W 1965. Head circumference of infants related to body weight. Arch Dis Child. 1965, 40, 672-6.

186. The following appears from the joint statement:

i) A substantial number of checks would be made by a GP at the 6-8 week examination. Mrs Waters said that by 8th October 2012 the hip examination, which would have been appropriate at 6-8 weeks, was not appropriate at 3 months. However other examinations may need to be adjusted slightly to be age appropriate. Ms Gooch said that de facto no aspect of the baby's development at 6-8 weeks can be observed or examined if the baby is not seen at that age by a doctor. She said there is no follow-up programme or system of referring healthy babies to GPs if they miss the 6-8 week developmental assessment.

ii) The experts agreed that the layout of the red book makes it easy for a nursery nurse or health visitor to see whether the developmental reviews have taken place, these including the 6-8 week review.

iii) There was a substantial divergence of opinion as recorded in the joint statement in relation to the 8th October 2012, 16th October 2012 and 13th November 2012 visits concerning the fact that the 6-8 week GP assessment had been missed.

187. Mrs Waters said that the nursery nurse's visit on 8th October 2012 was an ideal opportunity to check that no child slips through the net. She said that it was not reasonable for the nursery nurse to fail to check that the 6-8 week review had been undertaken and completed. She should have checked the red book, asked the mother if there were any concerns as a result of the 6-8 week review and checked if any follow ups were required and if they had happened. Her observations and advice and parental concern should all have been reported back to the responsible health visitor, that health visitor being responsible and accountable for supervising and delegating this task to the nursery nurse and for the support and care given to the family. She said that it was not reasonable for the nursery nurse to fail to check that the 6-8 week review had been undertaken and completed. Further, a competent health visitor would also have asked the nursery nurse (whom she was responsible for supervising) when she returned after 8th October 2012, if all reviews had been completed and if there were any concerns for the health visitor to follow up and to include at the 3-4 month review contact.

188. As to the 15th October 2012 visit, Mrs Waters said that this is the time when hip dysplasia is usually mentioned and the page in the red book brought to the parents' attention. It is particularly important to do this with families who do not have English as a first language so as to assure the health visitor that there is no misunderstanding about the services on offer and their importance. Finally, Mrs Waters repeated her opinion as to the failings of the nursery nurse's visit on 8th October 2012 as applicable to the nursery nurse's visit on 13th November 2012.

189. Ms Gooch's opinion was that nursery nurses and health visitors have no duty to check whether a parent has failed to present their child for a voluntary health surveillance check at 6-8 weeks, or at any other point in the life of the child, unless there are safeguarding concerns and the quality of parental care is being monitored. The fact that there is no mention of the failure to attend for the check does not mean that the nursery nurse or health visitor was aware of the non-attendance. She may or may not have been aware. By 8th October 2012 and subsequently, it was too late for the 6-8 week assessment, and there were no professional or parental concerns at this time that suggested that the child needed to see a doctor. Ms Gooch said that Mrs Waters'

suggestions as to what the health visitor should have done does not correspond with the usual practice of most competent and responsible health visitors in practice in or since 1987, inclusive of practice in 2012 and now.

190. In further response to Mrs Waters' view that the nursery nurses/health visitor in October/November 2012 should have advised the family to attend the GP as soon as possible for a physical examination relevant to his then age, Ms Gooch said that: (a) the 6-8 week examination could not have been done in October/November 2012 within the child health surveillance programme and GPs do not want to see a healthy baby at these ages for no reason; (b) the Claimant was being seen at the GP practice for a variety of other reasons in the relevant period. He had vaccinations on 9th and 28th August 2012, 25th September 2012 and 30th October 2012. The parents would have been asked by the nurse if the baby was at all unwell and the nurse would have noticed if the baby reacted abnormally when jabbed with the needle.

Waters/Gooch: examinations 8th October, 15th October and 13th November 2012; joint statement.

191. I shall deal separately below with the matters contained in the reports and joint statement following the amendment of the particulars of claim after the trial adjourned part heard.

192. Apart from the criticism in relation to the missed GP assessment at 6-8 weeks (see above) Mrs Waters made the following criticisms in her first report:

i). she would have expected the regional health visitor undertaking the 3-4 month review on 15th October 2012 to look at the growth charts and to note that the Claimant's head circumference had jumped a whole centile (at least) between 10th July and 8th August 2012, and had not been measured since. The regional health visitor should have measured the Claimant's head circumference on 15th October 2012 and sought urgent review if it was following a similar course to 8th August 2012, or the growth seemed unusually fast or out of step (as before) with other measurements including weight.

ii). the note on 15th October 2012 that the Claimant was attempting to lift his head in the prone position suggests that he was not managing it and was a sign that merited some thought. A healthy baby of 16 weeks would be expected to lift his head from prone without difficulty. Had the health visitor looked at the head circumference chart she would have seen the jump of a whole centile between 10th July and 8th August and the fact that there had been no head measurements since. Mrs Waters said that it seems likely that the Claimant was trying but unable to lift his head from prone on 15th October 2012 because of hydrocephalus making his head large and heavy.

193. In relation to these criticisms Ms Gooch says:
i). that the 15th October 2012 review took place in clinic. The Claimant was weighed but his head circumference was not measured as there was no concern about it, nor would there have been given the two measurements much earlier in life.

ii). Mrs Waters and Ms Gooch agree that a baby developing normally can be expected to be able to lift its head when placed on its front at the age of 16 weeks. Ms Gooch says that it is a red herring to make anything of the difference in wording in relation to "lifts head

in prone" and "attempts to lift head in prone". The health visitor saw the baby lift his head and recorded that contemporaneously. She was recording that she was satisfied that the baby had attained this developmental milestone. If she had been at all concerned she would have made a more detailed examination and would have made a written record of her concerns in the red book and on SystmOne.

Waters/Gooch: supplemental reports

194. After the provision of their supplemental reports, Mrs Waters and Ms Gooch were asked a number of supplemental questions.

195. I shall start with the matters of agreement. The experts agreed:

i). visual identification of an abnormally large head could be identified without additional features such as swelling, bossing or "sunset" eyes.

ii). health visitors do not diagnose hydrocephalus.

iii). health visitors use their eyes to inform the assessment they make of every baby and its parents. The assessment is also informed by what the parents say, especially if they are concerned about any aspect of the baby's health or development. The health visitor is particularly focused on the stage of a baby's development and whether it is behaving in line with its chronological age. Whilst an overall, or whole-body, visual assessment of a naked baby may not necessarily be made on each contact, the health visitor will usually identify a baby that is unwell, although it is seldom that this is the purpose of the consultation.

196. I shall turn in a moment to the answers to the detailed questions based on the neurosurgeons' supplemental joint statement. Before that it should be recorded:

i). the experts disagree as to whether it is probable that just looking at an infant will be sufficient for a health visitor or nursery nurse to identify an abnormally large head, or head and body not in proportion in an otherwise apparently well baby.

ii). in this regard, because she says the nursery nurse courses will also include information about children with disabilities, Mrs Waters considers that a regional member of the health visiting team should have been able to identify visually that something was not right with the Claimant's overall proportions, and should have recorded and acted upon that.

iii). the experts disagree as to what an overall visual assessment of a baby by a member of the health visiting team should comprise. Ms Gooch said that it did not necessarily or even usually include a whole body assessment of a baby stripped naked for the purpose, or otherwise sufficiently undressed for the whole body to be seen. Mrs Waters said that an assessment would be assessing and observing an undressed child to confirm that there were no unusual signs or symptoms based on experience. She applied this also to nursery nurses. Ms Gooch said that a nursery nurse will not undertake an overall visual assessment of a baby

on every occasion, and would not be doing so with the same skills and experience of a health visitor.

197. Mrs Waters maintained that on the October/November 2012 dates any reasonable member of the health visiting team, weighing a child, would not fail to observe and view the child and would not only concentrate on reading the weighing scales. The observations about the infant and the value on the scales would have been recorded, charted and acted upon by a reasonable member of the team whatever their grade. Ms Gooch said that she had not seen evidence that the health visitor weighed the Claimant on 15th October 2012; in many clinics this is done by an assistant or the parent themselves. She understood that the two nursery nurse appointments on 8th October 2012 and 13th November 2012 involved the nursery nurse in weighing the baby, and she accepted that the health visitor may have weighed the baby on the 15th October 2012 visit. In any event she did not agree that a whole-body physical assessment would have been made on any of those three appointments. She said that any views of the naked infant were incidental to the task in hand, namely reading the measurements on the scales in which the parent had placed the Claimant. She estimated that the time spent by the health visitor or nursery nurse looking at the naked or nappied infant form is usually less than 45 seconds during weighing. Most of that time the baby will be laid in the bowl of the scales. The baby is not out-stretched and most babies are moving/vocalising during the procedure.

198. The experts were further asked in relation to the three visits in October 2012 and November 2012 whether, with competent visual inspection, the Claimant's head would have appeared to a reasonable member of the health visiting team abnormally large or out of proportion to his body:

a. if it had reached the 99th centile, as depicted by the black line on the neurosurgeons' chart.
b. if it had reached the 91st centile as depicted by the red line on their chart.
c. if it had reached the 75th centile as depicted by the blue line.

199. Mrs Waters referred in her supplemental report to how she had tried to build a picture of how the Claimant would have presented. She said that his weight was recorded but there was no measurement of his length. She relied on the literature attached to her first report to demonstrate that most of the time an infant's weight, length and head circumference measurements will correlate. She said the large majority will have a weight, length and head measurement circumference that follow the same centile and are in proportion to each other. Her experience is that most of the time one sees a baby who appears visually in proportion. The assessment of overall proportion is made almost instinctively.

200. In relation to each of the three dates, and each of the three potential centiles for head circumference (99th, 91st and 75th), Mrs Waters was of the opinion that a reasonable member of the health visiting team looking at the Claimant would have been able to detect that something was not right with his overall proportions and to act on that assessment. This was in the context that in October he was weighed as being on the 9th centile and then between the 9th and 25th centile. In November his weight was on or about the 25th centile.

201. Ms Gooch's response was that she did not consider that the papers cited by Mrs Waters supported her proposition that an infant's weight, length and head circumference will

routinely correlate in apparently healthy infants. She said that there was no literature to support a contention that a reasonable and experienced primary health care professional (health visitor, but excluding nursery nurse) should have identified by visual observation alone, if the Claimant was dressed only in a nappy or naked, that either the baby was undernourished or his head was overly large. She referred to the fact that some 12 different health professionals saw the Claimant between August and December 2012. None identified an abnormally large head out of proportion to his body. Ms Gooch considered that an abnormally large head and/or one that was out of proportion to the body, even if it had reached the 99th centile would probably not have been identified by a reasonable and competent health visitor in October/November 2012; a competent nursery nurse would have been even less likely to do so, given their comparative training and experience in relation to a registered health visitor.

Mrs Waters' oral evidence

Evidence

202. Mrs Waters is a registered general nurse and health visitor who has been on the register for more than 30 years. She practised as a health visitor for that time. She is also a nursing officer for health visitors. She teaches health visitors at Oxford Brookes University and at a Berkshire Trust. She has regular contact with health visitors. She is the clinical director of a therapy unit. She regularly teaches in the NHS and in the private sector.

Health Visitors/Nursery Nurses

203. Mrs Waters agreed that health visitors are usually qualified nurses. Nursery nurses are not on the nursing register. However they are in the team. There will be a team leader. The team offers health visiting services as required by the SOP. Any health visitor delegating a task remains accountable and responsible for the service provided. The health visitor is also responsible for ensuring that any delegated task is within the competence of a nursery nurse. However nursery nurses are not trained in the same way as health visitors. They are not competent to measure head circumference.

Documents

204. The Defendant trust was responsible for the system and for training in relation to prevailing NHS standards and guidelines. The HCP was a guide for bodies such as the Defendant. The SOP is the Defendant's document implementing that. Mrs Waters agreed on the basis of a number of documents[29] that parents are offered services. Take up is voluntary. The health visitor should record if services are not wanted or are rejected and the reasons for this. Therefore provision of the health visitor services is not compulsory, though of course it can become such if the child is at risk and social services become involved.

The SOP between the antenatal stage and midwife handover to the health visitor

205. Certain extracts from the Defendant's SOP were highlighted in re-examination.

[29] The HCP, the SOP and the Red Book.

These were:

i. Midwifery services were required to notify health visiting teams of all antenatal mothers by completing a "Prospective New Parent" form by 28 weeks. The named health visitor should undertake a review of the antenatal/birth records where available before initial contact is made with a family between 32-37 weeks, this contact being documented in the adult (i.e. mother's) record. Midwifery handover of care form to be completed with the red book on every occasion by the discharging midwife on transferring care to the health visiting service. On this basis Mrs Waters said it was possible that Mrs Furmage would have known about the concerns in relation to intra-uterine and growth retardation and that the Claimant had had antenatal scans for growth.

ii. Within 14 days of the birth of the baby 90% of all new parents would be offered a 1:1 contact with a health visitor in their home. This would be the initial assessment by the health visitor who would already know about the child.

iii. At the initial health assessment the naked weighing and head circumference measurement required each of those to be taken and each "compared with birth weight."[30]

Head circumference measurement at birth

206. Mrs Waters was taken through the hospital and neonatal records between 27th June 2012 and 29th June 2012. Various checks were done and the Claimant's birth weight was recorded more than once. There was no provision on the hospital standard forms for the head circumference to be measured and no entry relating to the head circumference at that stage.

The red books changed after new growth charts were introduced by the WHO in 2009. The Claimant's sister's red book entry of 23rd October 2008 showed a single chart which included centile lines for measured head circumference from pre-term birth and subsequently. The Claimant's red book has a separate chart with the centile lines for head circumference measurement starting at 2 weeks. The 2009 WHO document listed as a key new feature of the new UK-WHO growth charts

> "No centile lines between 0 and 2 weeks."

207. In addition the WHO document states

> "Plot birth weight (and, if measured, length and head circumference) at age 0 on the 0-1 year chart."

Mrs Waters did not agree that the head circumference measurement was not usually done at birth. She said that this case was the first time she had come across it as not

[30] Although it is possible, I do not find that Mrs Furmage did know. She was not asked about this matter. See also Ms Gooch's evidence at [243] below.

being done deliberately, although sometimes she has seen it missed. In this regard the WHO document on the previous page says "The head circumference should be measured around birth…" Mrs Waters said that this meant as soon after birth as possible for a baseline reference.

208. In the textbook at one point[31] it says

> "A head circumference measurement in the neonatal period is potentially useful…"

Mrs Waters accepted that the neonatal period could in general terms be a baby 13 days old. She said that there has to be allowance for variations, for example some children are in intensive care, but she felt it was clear that the head circumference should be done on or about the date of birth. On a later page in the textbook[32] it says:

> "The head circumference should be recorded before discharge from hospital following birth. This is an important measurement and should be performed and recorded carefully….."

209. It was put to Mrs Waters that this statement in the textbook[33]:

> "Although the guidelines regarding head circumference monitoring are generally accepted in the UK, little is known about the accuracy, value or optimal timing of regular head circumference measurement or the relative merits of different referral criteria."

- implied that the rules were not as concrete in relation to head circumference measurements as Mrs Waters was suggesting. She did not agree and said that this passage was under the sub-heading "Research".

What health visitors should look out for in relation to head circumference

210. Here there are two pieces of guidance. The first is in the textbook where it says[34]:

i) "If the growth line is crossing centiles upwards and the child shows symptoms or signs compatible with hydrocephalus or other abnormality, specialist opinion is essential. If there are no accompanying symptoms or signs, two measurements over a four week period are acceptable.[35]"

ii) The WHO document which states:

> "Head circumference centiles usually track within a range of one centile space. After the first few weeks a drop or rise through

[31] Page 185.
[32] Page 187-188.
[33] Page 189.
[34] Page 188.
[35] It was agreed that this was to be interpreted that if the growth line was crossing centiles upwards without signs or symptoms compatible with hydrocephalus, then there should be two further measurements over a four week period.

> two or more centile spaces is unusual (fewer than 1 percent of infants) and should be carefully assessed."

Mrs Waters emphasised that there was only a four week gap between measurements and the Claimant's head circumference was not going along a regular centile line but was going steeply upwards.

10th July 2012

211. Mrs Waters was cross examined as to the measurements taken on 10th July 2012.She agreed that the weight was 3.14kgs and the head circumference 35.2cms. On the computer the head circumference showed as just above the 25th centile. In her first report she had said

> "The computer placed the 10th July measurement at just below the 25th centile on the graph"

Her response was that it was very difficult to read at the time. When she read it she saw it at just below but she accepted that it was slightly above.

212. As regards the red book, Mrs Waters accepted that the manual plot showed the head circumference as just above the 25th centile. In the joint statement she had said:

i). "…the growth line as calculated by the computer crossed upwards over the 25th and the 50th centile lines, that is across two centile lines…"

ii). "…the growth line as calculated by the computer crossed upwards from below the 25th to above the 50th centiles which was more than one centile space."

213. Mrs Waters accepted that the 10th July 2012 measurement did not cross upwards over the 25th centile or cross upwards from below the 25th centile.

214. As regards the results and interview recorded by Mrs Furmage on 10th July 2012 in the red book, Mrs Waters said that the results and interview where very thorough.

8th August 2012

215. The 6 week contact required by the Defendant's SOP provided that, if not already done by the GP, the health visitor would measure naked weight and head circumference. This is to ensure growth along expected centile lines in relation to growth potential and earlier measurement. Mrs Waters said that in most trusts the 6 week contact is with the GP, but the health visitor does the measuring at the GPs and the GP does the physical examination.

216. In evidence in chief Mrs Waters was asked in summary what she felt went wrong at this stage. She said that Mrs Furmage was in an unfortunate position because the red book did not have a head circumference measurement at birth. She said that this was a very important baseline. The two points on the graph were the 14 day measurement and the 6 week measurement. They presented quite an extreme picture for a gap of 4 weeks namely on the 25th centile at 2 weeks and just above the 50th centile at 6 weeks. This was a steep curve, particularly so when compared to the weight which stayed between the 9th and 25th centile. In chief Mrs Waters said that the textbook required a 6 week

gap. She said it would have been obvious that the line at 6 weeks in the Claimant's case could have gone up and beyond the 75th centile, thereby crossing two centile spaces. Therefore Mrs Furmage could have remeasured at 8 weeks i.e. 6 weeks after the first measurement, as well at age 6 weeks. She felt that the Claimant had been let down by not having a third value taken and recorded 2 weeks after the second one.

217. In cross examination Mrs Waters accepted when referred to the computer and manual graph that the head circumference measure of 38.3cms, was just above the 50th centile.

218. In her report, referring to the 8th August 2012 value being just above the 50th centile line, Mrs Waters had said that on the computer measurements, head circumference values on the growth line were crossing the centiles upwards on 8th August. As stated above, in the joint statement she said that more than one centile space had been crossed.

219. Two other statements from the joint statement were put to her. She had said:

i. "…it would have been clear from comparing and contrasting the charts that there was a jump from below the 25th to above the 50th centile on the head circumference chart…

ii. … in this case where there was a jump in the head circumference measurement on the chart from under the 25th to over the 50th centile in 4 weeks (crossing two centile lines) and an increase of 3.1cm…"

220. Mrs Waters accepted that the basis of (what Mr Todd described as) her red flag and her conclusions was the jumping across two centile lines and that this was wrong. However, she said that it was a very fine point, because it was still not expected growth where the first measurement was touching the 25th centile and the second was just over the 50th centile. She said this was still significant, and not what would be expected. It did not correlate with the weight increase.

In re-examination Mrs Waters was referred to the SOP page 7 dealing with the 6 week contact. In relation to the phrase

"To ensuring growth along expected centile lines in relation to growth potential and earlier growth measurement",

- she said that she would expect head circumference to continue roughly parallel with the curves on the chart. Although it was accepted that there is little in the literature to confirm this, in the Claimant's sister's red book (from 2007) is the statement "a normal growth curve is one that always runs roughly on/parallel to one of the printed centile lines…"

She said that nothing had changed in the period from then until 2012 as regards what was a normal growth chart.

221. Again in re-examination, Mrs Waters emphasised that the textbook required a head circumference measurement at birth and at about 6-8 weeks. Therefore the minimum gap between measurements would be at about 6 weeks. The Claimant was not provided with what the textbook envisages, only with a measurement at 2 weeks and 6 weeks i.e. a 4 week rather than a minimum 6 week gap. She said it was therefore not possible to

know whether there was or was not a "red flag" for the health visitor because it was not possible to see growth over a 6 week progression. She was not aware of any textbook or literature which indicated what "red flag" growth should be over a 4 week period. The Defendant's SOP of head circumference at 10-14 days and then at 6 weeks, if the only measurements, would not enable health visitors to be in a position to know if a red flag was present or not. Mrs Furmage had said that 3cms of growth in 4 weeks head circumference was not unexpected.[36] Mrs Waters said that given 3cms of growth in the 4 week period, Mrs Furmage could have done a straight line between the two points she had, and noted that it would have been going up very steeply. As a back-up she could have extrapolated 3cms over 4 weeks being approximately 1.5cms over 2 weeks and this would have shown the same sort of steep upward trajectory. Joining the dots on the red book and continuing the trajectory would have shown a very steep line as the black line agreed by the neurosurgeons also showed. Mrs Waters said that looking at these potential trajectories would have caused real concern given that there were only 4 weeks between the two points on the graph. There should have been at least one and possibly two more head measurements so as to check.

Weight/head circumference correlation

222. Mrs Waters accepted that there was nothing in the literature which says that a health visitor should compare head circumference growth with weight growth. Mrs Waters said it was all part of the health visitor's, or GP's, or other health professional's training. She said that there is a correlation, though there is very little literature on this. The health visitor was responsible for charting the weight and the head circumference and they would know that there was a correlation. She relied upon the Defendant's SOP at the 6 week contact where it suggested that, if the GP had not already taken the weight and head circumference, the health visitor should do so and should plot it. The rationale/evidence for this was

> "To ensure growth along expected centile lines in relation to growth potential and earlier growth measurement."

It was nevertheless pointed out to her that this does not require consideration of correlation between head growth and weight growth.

223. Mr Todd's point was that if the correlation between the two was important, and if a substantial difference in the correlation was a red flag for potential hydrocephalus, then it is something which must be in the guidance.

224. On two discrete suggestions by Mr Todd, Mrs Waters said:

i) The fact that weight of a baby drops after birth is allowed for in the weight centile lines.

[36] In the first joint statement Mrs Waters had said that the head circumference growth in absolute terms over the 4 week period should have been approximately 0.95cms compared with the actual absolute growth of 3.1cms.She realised that this was an error a couple of weeks prior to the restarting of the part heard trial. She had not noticed the correction in Miss Gollop QC's opening skeleton (paras 30-31). She had clarified it in examination in chief. Rather than the increase in absolute growth between what was measured and the average being 2.2cms (3.1 - 0.95cms), the increase was in fact 0.9cms (3.1cms – 2.2cms). Mrs Waters said that 0.9cms was still a significant increase.

ii) A baby with a familial large head usually starts with a familial large head.

Mrs Waters insisted that what was important here was that the weight was tracking along more or less the same centile line whereas the head circumference was not.

225. In relation to the first health visitor contact, provided for in the SOP, the requirement to weigh the baby and measure the head circumference was all part of measuring a well baby. It was to gain a baseline against which to measure future growth. Mrs Waters said that health visitors are the gatekeepers. At a very low bar, if a child is an outlier, it is for the health visitor to refer on for checks in case there is something more serious. The SOP requiring the head circumference measurement at the first visit is additional to the national requirement. Mrs Waters said this was a very good requirement of the Defendant. The textbook required head circumference measurement at around birth and at 6-8 weeks.

226. Mrs Waters criticised Mrs Furmage's use of the phrase "steady gain" in relation to the one centile space crossing in 4 weeks. She said that she would have expected Mrs Furmage to look at the head circumference and the weight. She said that there was no explanation for the big difference between the two. There was nothing in the textbook which suggested that one should look at the head circumference and the weight for assessing risk. In the Geraedts et al. paper it had stated that few studies had investigated the correlation with widely variable and even conflicting results. However that paper did find that head circumference correlated strongly with height and weight. Also, the 1965 paper of Illingworth and Lutz had stated:

> "A major difficulty is the obvious fact that at any given age a large baby is likely to have a larger head than a small baby, and vice versa. It is necessary, therefore, to relate the size of the head to the size of the baby – and a convenient index of the size of the baby is his weight…one can then determine whether his head size corresponds with (i.e. occupies the same relative centile position as) his weight…
>
> Summary
>
> The measurement of the maximum head circumference must be part of the routine examination of any baby. It must be related to the size of the baby, and the weight is a good index…"[37]

227. Mrs Waters reaffirmed that it was generally known that length, weight and head circumference roughly correlate in normal children. She said that every time a health visitor plots parameters on the graph, it is fairly easy to compare the head circumference and weight growths.

The missed GP 6-8 week check

[37] Reference was also made to the claimant's red book which, when referring to "length and height", said: "Healthy children may be on a different length/height centile from the weight centile, although the two are usually similar."

228. Mrs Waters accepted that there were a number of occasions where the records suggested that the parents had been advised about making a GP appointment at 6-8 weeks.[38] The Claimants also saw a general practitioner on 1st August 2012 about eczema where the baby was described as well, feeding and cooing. Mrs Waters accepted this was a chance for the parents to book the 6 week check. There were also a number of visits to the GP for vaccinations in August/September 2012.

229. Mrs Waters agreed that, in relation to the GP appointment, what the Defendant had done was entirely appropriate until October 2012.[39]

230. Mrs Waters did criticise the Defendant in October 2012 because she said that it should have been noted from the red book that the GP check had not been done. This should have been discussed with the parents. They should have been reminded to have it done, or if they did not want to have it done, it should have been established that that was the case and it should have been recorded. She said that busy parents can forget. It was the health visitor's role to check those matters. She relied on the HCP as making it clear that the named health visitor had to co-ordinate and ensure that the HCP was delivered. She said that this was not a counsel of perfection. Even without the HCP it was not reasonable for a health visitor to do nothing when it was realised that the GP check had been missed.[40] Mrs Waters' evidence was that the GP would not refuse to carry out an examination at a later date because the testes, hips and heart can be checked at any time up to a year old.

15th October 2012

231. In relation to the 4 month contact, Mrs Waters said that this contact, required by the SOP, was additional to what was required nationally. It is clearer and not typical of every trust. Again it was:

> "To ensure growth along expected centile lines in relation to growth potential and earlier growth measurement."

The health visitor had to consider the data as to whether the child was following expected centile lines.

232. Mrs Waters was asked in cross examination about the red book entry of "good head control, lifts head in prone…" and the computer record of the same date "…good head control, attempts to lift head in the prone." She said that she and Ms Gooch agreed that at 16 weeks a healthy baby should be able to lift his head in the prone. She had read the record of "attempts" as trying unsuccessfully to lift the head and therefore there was a risk that the milestone was not reached. She accepted in relation to the computer record

[38] These were at a GP appointment on 29th June 2012, a midwife appointment on 16th July 2012 and Mrs Furmage's note on 8th August 2012.

[39] In the joint statement Mrs Waters had raised the possibility that the parents English was not the first language and therefore perhaps they had not understood. She accepted, having seen the parents give evidence, that their English was very good. Also at the first visit on 10th July Mrs Furmage had established that the mother spoke English fluently.

[40] Mrs Kirkpatrick's witness statement said that she would have noted that the claimant had not had his 6 week check with the GP.

that it suggested, by saying "good head control" that the baby could lift his head because there would not be good head control if he could not have lifted his head successfully.

233. As at 15th October 2012 Mrs Waters said that the health visitor should have looked at the red book, seen the two entries in July and August of head circumference measurement and the steep rise. She should have noted that there were two points of measurement and not three. It was an ideal opportunity to take another head circumference measurement and chart it. In addition the health visitor should have noted, as she said in her evidence that she did, that the 6 week GP visit had not been undertaken.

Allegations in the Re-amended particulars of claim

234. In her supplemental report Mrs Waters had said this:

> "5. Hydrocephalus is rare. Hydrocephalus without an obvious visual indicator such as frontal bossing or bulging eyes is also rare. I do not think it would be reasonable to expect a health visitor to diagnose hydrocephalus from looking at XM's head alone.
>
> 6. However, I do think that the reasonable member of the health visitor team looking at XM without clothes on should have been able to detect that something was not right with his overall proportions and to act on that assessment."

In relation to this it was common ground that it was not for health visitors to diagnose hydrocephalus. This supplemental report was predicated on the head being on the 99.6th centile, because at that stage Mrs Waters did not have updated neurosurgical evidence from Professor Hayward. She said that she would expect members of the health care team to see that the head was large, that something was not right and to do something about it. She did not think it was a reliable indicator of hydrocephalus but it was a "nudge". She said that one would think that something was not right. If you see a child who looks not right then it should be followed up.

235. After having seen Professor Hayward's updated evidence and his red line, Mrs Waters had commented in the joint statement that it was her conclusion that any centile from the 75th upwards would result in the child looking slightly odd and out of proportion. There was a risk therefore if that lack of proportion was unexplained.

236. Mrs Waters was cross examined as to why this point arose only in 2019. It seemed reasonable to infer that she had been involved in the case prior to the letter of claim in 2016. She accepted that that letter of claim was probably based on her conclusions. She had also attended conferences. She had known throughout that the Claimant had a large head crossing centile lines from August 2012 onwards. Her response was that she did not make any point in this regard because she was asked to address issues and she addressed the issues put to her. She did not put it in the report because she was not asked about it. It would have been something that had occurred to her. She was considering of breach of duty (unlike Professor Mallucci). She did not accept that her language in her supplemental evidence indicated that she was not convinced by this

point, or that she had considered it prior to the trial adjourning part heard and rejected it because she did not think it was a good point.

237. Mrs Waters affirmed that any reasonable health visitor would have checked that all check ups had been done, would have seen that the child had a big head and followed that up, and also noticed the steep trajectory on the two plotted points in July and August 2012 and that they did not correlate with the weight trajectory.

In re-examination Miss Gollop QC elicited that two things had changed in late 2019:

a. There had previously been no admission in the defence that the claim was crossing centile lines in August 2012. The Defendants had no admissions about centile lines. Then Professors Mallucci and Hayward agreed the centile lines trajectory.

b. Some 10-14 days prior to trial Mrs Kirkpatrick's undated witness statement was received. In that witness statement at paragraph 19 Mrs Kirkpatrick had said "it would have been inconceivable that I would not have noted an extremely large head above the 90th centile." Mrs Kirkpatrick had said that she wrote her statement after seeing the trial papers and the agreed black line of the neurosurgeons. Then there was similar oral evidence from the three witnesses of the Defendant's team. That was the context in which Mrs Waters said her mind was focused and that confirmed her experience and opinion.

21 October 2012 photograph

238. As regards the 21st October 2012 photograph Mrs Waters said that it showed a happy baby who appeared to be holding his head up. She could not go further than that. She was not able to say whether that suggested that he could lift his head from the prone position.

Familial large head

239. Mrs Waters said that the parents did not appear to have a familial large head and as far as she could recollect Ms Gooch had not suggested that explanation for the increase in size between the two measurements in July and August 2012.[41]

Ms Gooch's oral evidence

Experience

240. Ms Gooch qualified as a registered general nurse in 1984 and a health visitor in 1988. She practised mainly in London. She has been in continual clinical practice. She has held a number of posts in the NHS and in private practice.

Documents

241. It was clarified with Ms Gooch that the HCP was published on 27th October 2009, the evidence base being the Hall textbook. The WHO document was not published until

[41] MM's statement at paragraph 17 said "my mother told me that my brother's son had a large head and that it was probably something that ran in the family."

November 2009. The SOP references include the WHO document and the 2006 version of the textbook.

242. The NIPE document of 2008[42] and the NICE document of 2006[43] both required doctors to do a general physical examination, part of which would be to do a head circumference measurement at birth, or within 72 hours of birth, and to plot that measurement. Ms Gooch said this was not done on 29th June 2012 by the GP. She said it was not uncommon that doctors do not do a head circumference measurement. They need a piece of equipment. If that is not available, that may explain why it is not done.

The SOP between the antenatal stage and midwife handover to the health visitor

243. Ms Gooch did not accept that the first contact with the family would probably be at 32-37 weeks based on the SOP. The health visitor would get information prior to birth and should undertake a review of the antenatal birth records. It was for the health visitor to make a judgement as to whether it was necessary, or a priority, to see the woman before the baby was born. Here it was the third baby of the mother and there were no previously known risk factors. It would not have been a priority to see her before birth. As to the intrauterine growth retardation, this would be left entirely to the midwives and obstetricians[44]

Head circumference measurement at birth

244. In her report Ms Gooch had said that the textbook

> "suggested that a baby's head circumference was measured at the time of his birth and at a 6-8 week developmental assessment, but not again unless there was cause for concern. If there was professional concern about head circumference in the absence of signs or symptoms of hydrocephalus, one repeat measurement in one 4 week period was recommended."

245. Ms Gooch agreed that when the textbook described taking the measurement at birth it was meant between birth and 72 hours of age.

246. Ms Gooch said that birth measurement is not always recorded or written down, or the record is not available subsequently. She is aware of a number of such cases. One reason is there can be a lot of movement of children. She had worked in Brent where one third of the children on the school roll change each term. She regularly saw children with no child health records. For the settled population there is usually a birth head circumference measurement, but it is not uncommon that the health visitor for whatever reason would not have it. Parents moving house at a baby's age 0-3 months is more common than one might think. In those circumstances the health visitor is very reliant on the red book.

247. The suggestion put by Mr Todd QC to Mrs Waters that the first measurement could be between 0-14 days had not come from Ms Gooch. Nor did it come from the textbook

[42] Newborn and Infant Physical Examination March 2008.
[43] Recommendations: Post-Natal Care up to 8 weeks after birth. Guidance. NICE. I was not taken to this document though it was in the supplementary bundle.
[44] The Core Content of the SOP made this clear.

or any other literature of which she was aware. The only significance of the 14th day of life was that it was about when the health visitor would first meet the child. The midwife would at about that time drop out of the picture.

10th July 2012

248. The requirement in the SOP for a head circumference measurement at 14 days was most uncommon in 2012 and is still most uncommon. Mostly health visitors have nothing to do with head circumference. Usually the first measurement is by a doctor at or within 3 days of birth. Then at 6-8 weeks it is done by the GP or a member of the GP staff or the health visitor, depending on the team working relationship.

249. Ms Gooch said that what is unusual about the Defendant's policy is:

i) It requires the health visitor to measure the head circumference at 10-14 days, though not compare it with a birth measurement.

ii) At 6-8 weeks, because of the way the GPs seem to have been organised in the area, the SOP separated the health visitor and GP check. Although the 2009 document suggested greater integration of services, by 2012 lack of investment in Sure Start centres meant that if integration had not happened by then it did not subsequently happen.

8th August 2012

250. Ms Gooch said that the responsibility for the 6-8 week assessment is that of the general practitioner. However the health visitor may do the head circumference measurement if the health visitor sees the baby before the baby is seen by the GP. In that case the health visitor should do growth measurements.

251. In almost every other part of the UK there is no requirement to measure at the first visit around the 14 day mark. If there is no birth head circumference measurement, there would only be one measurement at 6-8 weeks unless there were any concerns. For quite a lot of children the only measurement available is the 6-8 week measurement, with no earlier baseline. There is therefore no assessment of head circumference growth. That is because head circumference has never been part of the health visitor practice for a critical measurement in the diagnosis of children with neurocognitive disease. Ms Gooch said there was quite a lot of evidence that it was a historical artefact that we in the UK concentrate on weight, length and head circumference. The practice continues even though it is not particularly effective. Growth measurements have not met the required criteria to be screening tests. Ms Gooch said that if we were starting in the UK now, and we had never done head circumference measurements, we would not do them. The vast majority of children with heads which are too small or too large do not have underlying pathology. She referred (for the first time in her oral evidence) to a study in 2015 of 10,000 children in Bristol where she said it was confirmed that head circumference measurements do not matter. The principal reason for referral for small or large head is measurement error. 93% of the children in the Bristol study who had later neurological problems had heads as a baby within the normal size range.

252. Notwithstanding the above, Ms Gooch accepted that the textbook said that the rate of growth of the head circumference is what is important. If a health visitor does measure

head circumference, then generally speaking in the UK it is done at the 6-8 week stage. Where the health visitor does the head circumference measurement, interpretation is done by the general practitioner. It is to inform the general practitioner as to the overall development of the baby. From 2009 there had been a move towards of integration of services. Often by 2012 a baby would be taken to a health centre where the health visitor would see the baby and then the baby would be seen by the GP. The health visitor would do the measurements and the GP would interpret the growth measurements, though the health visitor would not switch off her interpreting brain. It is the GP who is responsible for the 6-8 week check and who gets paid for it.

253. In the Defendant trust when the health visitor did the 6-8 week check, if not already done by the GP, the health visitor would be assessing milestones, bonding with the mother etc. It was a more holistic assessment than the physical health of the baby. It was however entirely customary for the health visitor to see a baby to do a holistic assessment and growth measurement, even if the GP appointment was on a subsequent date. The health visitor would be doing the measurement to aid the GP. If a health visitor saw a baby at 6 weeks with a head circumference of concern, using the textbook as a reference point, the health visitor would make sure that the GP was aware of the unusual data for when the GP did the rest of the examination. Therefore if the head circumference had crossed two centile lines, the health visitor would make the GP aware. In that situation the health visitor would refer to the GP before the GP assessment.

254. At 6 weeks, if not already done by the GP, the SOP required the health visitor to take and plot head circumference. Ms Gooch accepted that the rationale required the health visitor to look to the future and to the past in interpreting the data obtained. If the head circumference or other growth measurements were of concern by reference to the standards in the textbook, then referral should be made.[45] Ms Gooch accepted that all the health visitors who do head circumference measurements at 6 weeks will look to ensure that growth is along expected centile lines, looking to the future and with reference to the past.

255. The textbook recommended that on the second measurement at 6-8 weeks a judgment and decision should be made. The decision would be whether to take no further action with regards to the head circumference measurement, whether to measure again, or whether to make a referral. If there were no signs or symptoms of hydrocephalus but the growth line was crossing centiles upwards, Ms Gooch interpreted the passage from the textbook as meaning that there should be a further measurement over a four week period. Most health visitors would not monitor by doing a further measurement. A further measurement would be uncommon because there is a low bar for referral to a medical practitioner. If a further measurement was done it should be closer to the 4 week point. The health visitor would be looking to see what change there was in a period of 4 weeks. Therefore if the Claimant's head measurement on 8th August had been one for concern, then the health visitor should refer or re-measure some 3-4 weeks later.

256. By requiring a head circumference measurement at the first 10-14 day assessment, the Defendant was putting health visitors in the position of potentially considering three

[45] The textbook is not specifically referenced in the body of the SOP, although it is one of the references at the end.

pieces of data, not two. The second and third would be plotted on the red book and on the computer, as would be done here. The computer only permitted the health visitor to plot at 14 days. Therefore the 13 day head circumference measurement by Mrs Furmage was not plotted on the computer. However she did plot it on the red book. A health visitor could also plot the birth head circumference, if available, but Ms Gooch said that one had to be cautious about the first measurement because of scalp oedema etc, though this was an area where a health visitor would have to exercise judgment.

257. Neither the SOP nor the textbook said what should be done if the earlier birth measurement was missing. The witnesses and the Court did not have available any of the Defendant's training materials from that time.

258. As to the textbook rationale for doing a head circumference measurement at birth, the second reason was that

> "a baseline measurement may occasionally be useful if there is thought to be rapid head growth in the early weeks of life."

Ms Gooch said that rapid head growth is not usually picked up only on head circumference measurements.

259. Ms Gooch accepted that if the head circumference at birth had been measured and was plotted at being on the 9th centile, and at 6 weeks was on the 50th centile, the Claimant would have been the paradigm example identified by the textbook. She said that if the health visitor was aware that the baby was in that position, then she would have expected her to inform the mother and the general practitioner because the baby was crossing two centile lines upwards.

260. Ms Gooch said that if the health visitor was aware only of the absolute head circumference measurement at birth then, at 6 weeks, she would not plot the birth measurement on the chart. She might, when referring to the general practitioner, make the GP aware of the birth head circumference measurement but she would not interpret it. Ms Gooch was closely cross examined on this response. Where the SOP required the health visitor to look backwards and forwards, she said that there was no means by which the health visitor would retrospectively plot the absolute birth head circumference in the absence of any concern about the baby. If there was only the absolute birth measurement, which had not been plotted, then a 6 week measurement which was plotted, the health visitor would mainly look at the wellness of the baby. There would be two measurements but the health visitor would not really be making use of those.

261. Ms Gooch did not accept that the health visitor was failing to provide a reasonable standard of care if she had an unplotted birth measurement, a 14 day measurement (plotted) and a 6 week measurement (plotted), and did not use that information to see if the baby was crossing two centile lines upwards from birth to 6 weeks. She said that the condition from which the Claimant suffered is very rare. A very small percentage of those cases would be picked up at 6-8 weeks. She said that the textbook is quite prescriptive, which is a difficulty. When one adds in the value of the centiles in the first 2 weeks of life and measuring errors, it becomes more challenging to link the textbook

standards and the positive outcome for an individual patient. Ms Gooch said that for a child who is asymptomatic, in the absence of the doctor plotting the birth head circumference, the textbook standards did not really work. The textbook was to give guidance and the tools professionals need as to what is properly normal and what might need further investigation. She accepted that if the Claimant had had his head circumference measured by the GP on 29th June 2012 and the GP had been using the SystmOne computer system, then the measurement could have been plotted. It was not clear whether the GP was using that computer system. The entry of 29th June 2012 is on an old Lloyd George card and there is no head circumference measurement. Further, the page for the GP to be completed in the red book had not been completed.

262. It was possible to plot the birth head circumference on a computer and to plot it thereafter so as to see if two centile lines were crossed. It was also possible to use the red book centile chart to plot a birth measurement, though the centiles do not extend down to birth.

263. There is a growth chart in the WHO document which gives to one decimal point the head circumference measurement for boys between 0-13 weeks and the relevant centiles. Ms Gooch said these data in the table produced the centile chart. However the WHO document itself is not a tool that health visitors use.

264. Ms Gooch agreed that one cannot assess the rate of growth from a single measurement. She did not agree that care would be below standard if a health professional did not require at least two head circumference measurements.

265. Ms Gooch had worked on the assumption that the graph which has the line from a dot plotted at 6 weeks and going beyond 6 months (which had been provided by the Defendant), connected the 6 weeks dot to the time when the diagnosis of hydrocephalus was made at the end of 2012. She agreed that there is no plotted point at the end of the year. Neither is there a plotted point before the one at 6 weeks. SystmOne can generate a trajectory i.e. join up two plotted dots if two pieces of data are put in. As far as she was aware the system does not produce prediction of a centile into the future.[46]

266. Ms Gooch said that she could not answer what the expected head circumference growth would have been after the second measurement because there were only two measurements. If there are no birth measurements then there is just the 6 week measurement. There was no provision in such case for measuring the growth of a baby's head again in services across the country, in the absence of other concerns. She accepted that well children with hydrocephalus could then fall through the net.

267. As to Mrs Furmage's use of the phrase "steady gain" for the head circumference, health visitors use this to reassure parents. Ms Gooch did not use it because it is not usual to describe a satisfactory head circumference measurement in this way.

268. When Mrs Furmage did her measurements on 8th August 2012 she was required to check that the growth was not outwith the parameters of crossing two centile lines. She could only go on the head circumference growth over a 4 week period, plus her knowledge of the family and the fact that there were no known risk factors. Ms Gooch

[46] Mr Todd said that he was not suggesting that the document was contemporaneous as at 8th August 2012.

disagreed that because there had been a gain of 3cms in a month, one should use that growth to look into the future.

269. It was suggested to Ms Gooch that the textbook suggested two parameters

i) A time period of 0-6 to 8 weeks and

ii) Two centile spaces crossed.

She said that the parameter of crossing two centile spaces was irrespective of period. If at any point e.g. a whole year, the head circumference crossed two centile spaces it was still significant. She said that the textbook was not interested in a minimum or a maximum period. She did not accept that the basis of the standardised measurements of growth in the textbook was for the first measurement at 0-72 hours of age and the second at 6 to 8 weeks of age. She said that that did not make any sense, since it was also suggested in the textbook that if the growth line was crossing centiles upwards and absent accompanying symptoms or signs, another measurement over a 4 week period would be acceptable. It was pointed out to her that that was where there was already two measurements and the centile lines had been crossed.

270. Ms Gooch was asked whether there was any minimum period between two head circumference measurements. She said, when 2 weeks was suggested in cross examination, that professionals would not leave such a small gap as 2 weeks.

271. Certain passages from Doctor Bint's supplemental report were put to Ms Gooch.

i) Doctor Bint had said

> "it is highly unusual for a baby's head to increase one centile between age 2 and 6 weeks"

Ms Gooch said that her experience is that it is not uncommon. It is not unusual. It sometimes happens.

ii) Doctor Bint had said

> "what one expects – and what one almost always finds – is that growth in head circumference at birth, 2 weeks and 6-8 weeks will all roughly follow the same trajectory and all of these measurements will be on or parallel to a centile line."

Ms Gooch did not agree. She said that in the experience of health visitors the increase is highly variable. Health visitors do fewer head circumference measurements than they do weight measurements. When they do compare head circumference measurements quite commonly they will not be on one centile line or parallel to one centile line. Health visitors would not have to measure head circumference for every baby. GPs would have to offer a 6-8 week assessment including head circumference measurement for every baby. Nevertheless health visitors should see all babies at about this age of 6-8 weeks.

iii) Doctor Bint said

> "growth between two weeks and six weeks of one centile space would fall in the middle between the expected line versus a highly unexpected and grossly abnormal line."

Ms Gooch said that there was nothing other than the textbook for raising the alarm if the growth was not crossing two centile lines upwards, in the absence of other concerns. If the baby did not cross two centile lines then it was considered to be normal, even if the measurements were over a period of 4 weeks.[47]

iv) Doctor Bint had continued

> "following a trajectory of an increase of one centile space in a month would mean that within a few more weeks at the same rate of growth it would then cross the second centile line and would mandate referral."

Ms Gooch disagreed. She said that a health visitor would not be expected to draw any such inference. She would be reassured by the 2 week and 6 week measurement. It was not part of the health visitor's job to speculate on what a 0-6 week measurement would be, nor on the future. She would be reassured on the data she had. As to a nursery nurse, she would not have the skill or expertise in looking at or interpreting head circumference measurements.

v) Doctor Bint said that

> "without a recommendation for another measurement in around 2-4 weeks the risk here was that an abnormally growing head would simply be left unmonitored and unidentified."

Ms Gooch said that there was no reason to monitor the many babies who fall into this category. It is not something a health visitor would do to plot the line from 2-6 weeks into the future.

Correlation of head circumference and weight

272. Ms Gooch said that the SOP text on the initial assessment at 10-14 days the requirement to gain a baseline measurement to measure future growth focused on weight. The rationale/evidence says

"…interpretation should be compared with birth weight…"

It was not clear what the rationale was for measuring head circumference, if there was a rationale. In principle both the head circumference and weight could be compared with birth measurements.

273. In the supplemental joint statement Ms Gooch, when referring to the Geraedts et al paper said

[47] In re-examination she was also referred to the passage from the 2009 WHO document that after the first few weeks a drop or rise through 2 or more centile spaces is unusual (fewer than 1% of infants) and should be carefully assessed. This was another threshold apart from the one in the textbook.

> "That study found that correlations between head circumference and other growth measurements were highest at birth, followed by a rapid decline to a stable level by 2 months of age, and no significant influence from then until the 11 years."

274. In evidence she did not accept that the literature showed a correlation between head circumference and weight. She said that the literature was contradictory. Sometimes it showed a correlation, sometimes not. Even on the correlation showed in the Geraedts paper i.e. in the first two months, she said that if there is a correlation it is unreliable. In those first two months one or two papers suggest a correlation between head circumference and weight. There is not a good body of literature on which to rely. Babies' shapes and sizes vary. Some are long and thin, some are short and tubby. Correlation is not something to which a health visitor gives consideration. It is not part of the training, practice or guidance that it should be.

275. In her original report Ms Gooch had said

> "…when measured at 13 days, his head circumference was healthy and in line with expectation and his weight at that time was on the 5th centile…"[48]

Ms Gooch said that the expectation for the head was such that it was not surprising if it was on a different centile than weight. Head circumference grows in the way it is expected to grow but weight is more subject to external factors. At 13 days the Claimant was not at either extreme. It was not possible on that measurement to say how the head circumference intended to grow because there was only one measurement. She was making the cross check in the report because she was giving expert evidence. This is not what a health visitor does.

276. If at 6 weeks there had in fact been significant deviation in the measurement of the head circumference, she would expect a health visitor to look at other parameters. She did not expect babies to stay on the same centile line for head circumference or weight. The health visitor would plot at 2 weeks and 6 weeks to ensure growth along expected centile lines i.e. less than across two centile spaces. The SOP had been written by health visitors for health visitors. They understand that growth over a period of two years would generally follow a centile space or line, but not over a short period. Health visitors do not expect to see growth tracking along the same centile space or line. The expected centile line for the Claimant's head was for it not to be outwith the crossing of two or more centile spaces. The SOP wording is more precise than intended. It is the textbook which is important in this regard. The SOP does not mean tracking along the same centile line over a 6 week period.

The missed GP check

277. Ms Gooch said that it was the duty of the health visitor to remind the parents of the 6 week check prospectively. After it had been missed, it was not then the health visitor's responsibility. There was no duty of care on the health visitor then. In October/November 2012, it was beyond the 8 week limit of the 6-8 week check. Some

[48] 5th centile appears to be a mistake for 15th centile but nothing turns on that.

parts of the check could not then be done. She said that no health visitor would refer back to the GP for a missed development assessment at that stage.

278. In her report Ms Gooch had said, referring to October/November 2012:

"GPs do not want to see a healthy baby at these ages for no reason",

She reiterated that it was not usual practice and there was no system for referral back to a GP and no guidance in relation to a missed 6 week check. Ms Gooch said that the health visitor saw the baby at 4 months on this occasion. In other areas the health visitor would not see the baby again after 6-8 weeks until 10-12 months. The Claimant happened to be seen because of the SOP but that did not impose a duty of care on the health visitors to advise the Claimant's parents about the missed GP check. She did not know why the extra assessment at 4 months was in the SOP. She doubted that it was put in as a "safety net".

279. Mrs Kirkpatrick had noticed that there was no 6-8 week GP check. Ms Gooch accepted that there was no reason why she should not have given advice to the parents. It might seem eminently sensible but it was not part of practice. It would not be a good use of resources to advise parents who had chosen not to take the baby to the GP. These were competent parents who had had the information and the information was also in the red book, which is as much for parents' use as for the use of professionals. She was not criticising the parents because it is difficult with three young children, but it was not required that the health visitor had a conversation with them about the missed GP appointment. It would have been a waste of resources to take the child back at that stage. It simply is not done. Ms Gooch said that the child saw the GP and went to the GP for vaccinations. It would have been noted there that the red book showed that the 6-8 week check had not been done but, in the absence of concern, it would not, and did not, stimulate having it done late.

Allegations in the Re-amended particulars of claim

280. Ms Gooch said that she did not see Mrs Kirkpatrick's witness statement until a week before the recommencement of the trial. It was not in her papers in June 2020. She had seen Ms Kirkpatrick's witness summary at the time of the supplemental joint statement.

281. In her supplemental report Ms Gooch said that she did not accept on the evidence that she had seen that the Claimant had an unusually large head, or a head and body so out of proportion that these features would have been obvious to a competent nursery nurse or health visitor on the dates as alleged.

282. Ms Gooch said that she had heard the Defendant's team give evidence. The effect of that evidence was that they could not countenance that they would have missed a head if it had been on the 99.6th centile. She had not dealt with what they had said in her supplementary report, or the supplemental joint statement, because she answered the questions that were put to her.

283. Ms Gooch said that she thought that there was an entirely plausible explanation. She had been thinking about this very carefully recently. She said that it was natural instinct for somebody to say how could they miss the head if it was that big. However she had

done some calculations which she thought might explain why, despite the fact the witnesses thought that they would have seen it, in fact they would not.

284. Ms Gooch had plotted on an A4 size WHO chart the actual head circumference at each key centile, 50th 75th and 99.6th at 16 and 20 weeks. She had done a rough and ready calculation. She had divided the head circumference by π to give a diameter in each case. The difference in diameter between the 50th and the 99.6th centile was 1.03cms. In terms of the circumference of the head it was a difference of 0.35cms on each side. Between the 50th centile and the 75th centile the difference was 0.24cms in the circumference and 0.6cms on either side of the head.

285. Ms Gooch said that although it seemed logical that it would be visually apparent, doing the calculation and looking at the difference in blown-up balloons (which she had done the day before), the difference is so small in reality.

286. Ms Gooch said that a health visitor would see perhaps 200 different children a year. She said that she would not accept that they had a feel for a child who was in proportion. They did have intuition about a child who was not healthy but not a child who was out of proportion. She accepted that for her calculation she had assumed that the head was round. It may be different if the head was in fact elongated front to back. She could not say from the 21st October 2012 photograph if the Claimant had an elongated head.

21st October 2012 photograph

287. Ms Gooch said that looking at the 21st October 2012 photograph, the baby showed good head control. She was confident that the baby would have been able to raise its head in prone, unless for example the baby was asleep or being uncooperative.

Drs. Bint and Bracey: reports prior to adjournment of trial

288. The GPs agreed that if the Claimant had been seen within a few days of 8th August 2012, with specific concerns communicated by Mrs Furmage to the GP about an enlarging head circumference, then the GP would have suggested a remeasurement of head circumference in around 4 weeks.

289. If the Claimant had been seen a week or more after 8th August 2012 then the GP would have plotted the head circumference and would then have seen that it was heading towards the 75th centile and made an urgent paediatric referral.

290. The GPs also considered what would have happened had the Claimant been seen for the 6-8 week GP assessment without any specific mention of concern by the health visitor about head circumference.

291. On that basis then if the Claimant had been seen for a routine check within a few days of 8th August 2012, the GPs agreed that the GP would not necessarily have reweighed, or remeasured the head circumference. However, at this point there is some disagreement:

- Dr. Bint said that a competent GP would not solely rely on the recorded entry from the health visitor of "steady" gain but would view the plotted entries him/herself. Upon noting the disproportionality between the two, a competent

GP could not safely consider them to be normal without further reviewing the trend in another 4 weeks or so. Therefore all competent GPs would, as a minimum, have suggested that the Claimant return for a remeasurement.

- Dr. Bracey said that some GPs would have considered the disproportionality between weight and head circumference and wanted to remeasure it in 4 weeks. However, there would be some GPs who would have considered it normal and not believed that further monitoring was required at that time. This was particularly bearing in mind that the health visitor's recorded opinion on 8th August 2012, on which expertise the GP would be entitled to rely, that there had been "a steady gain" in both Claimant's weight and head circumference.

292. Had the routine GP check taken place a week or more later than 8th August 2012, then both GPs agreed that a general practitioner would have plotted the head circumference, would not have considered a trajectory towards the 75th centile to be steady growth and would have required urgent referral to paediatrics.

293. Based on the neurosurgeons' black line chart, the experts agreed that had the head circumference been measured from early September onwards, as a follow up to an August measurement, or had there been a GP referral in October or November 2012, then the head circumference would have been measured and plotted. It would have been noted to have been fast approaching the 75th centile (or would have passed the 75th centile on or around 8th September 2012). In such a case there would have been an urgent referral to paediatrics.

Drs Bint and Bracey: supplemental reports

294. There was very substantial agreement in the GPs' supplemental opinions.

295. The question was asked whether a reasonable GP would wish to examine a baby who has missed the 6-8 week GP medical check, notwithstanding that there are no apparent health concerns and the 8 week age had passed. They agreed that the 6-8 week health visitor physical check did not include a check of the heart, hips and testes. All three of these elements do need to be checked at some point, even after the 6-8 week window has passed, and even when there are no apparent other health concerns. The reason is that it is important to ensure that there are no congenital abnormalities thus far undetected. These include obvious cardiac abnormalities (such as a murmur), and development of dysplasia of the hips. It is also important to check that the testes have descended. It is necessary to exclude congenital conditions such as these. They can have serious health implications for the child and are potentially treatable and curable if identified early.

296. The GPs were asked whether an increase in head circumference from 25th to 50th centile over a 4 week period represents a departure from the expected rate of growth. This was similar to the previous question which caused disagreement[49]. Both GPs said that one usually expects the rate of growth roughly to follow the same trajectory and therefore be on or parallel to a centile line. Dr Bint therefore considered that movement from the 25th to the 50th centile line in 4 weeks is not an expected rate of growth and is more than one expects. Whether it was significant or not would depend on a third measurement

[49] See [291] above.

and what centile trajectory the third measurement generated. He said a GP would not know if this trajectory was heading towards crossing the second centile without a further measurement in around 4 weeks. Dr Bracey said that in 2012 some GPs would consider an increase from the 25th to the 50th centile over 4 weeks to be a rate of growth of significant concern. However, there would be other GPs who would not consider it to be significant in view of the fact the head circumference was still only on the 50th centile. This is also the case, given that the 2009 Royal College of Paediatrics and Child Health advice on plotting and assessing infant and toddler growth was that if there is a fall or rise through two or more centile spaces the child should be carefully assessed.

297. In the context of a remeasurement 4 weeks after the measurement on 8th August 2012:

(i) the GPs agreed that if the curve continued on the same trajectory as before, it would make the head circumference hit the 75th centile, thereby representing the crossing of two centile lines. This would be concerning and would mandate urgent referral to paediatrics.

(ii) if the further measurement was at or above half-way between the 50th and 75th centile, this would be concerning because it would be a trajectory heading towards the 75th centile, albeit less steeply than in (i) above. This would mandate a referral. If the further measurement was only slightly above the 50th centile (i.e. was following the blue or red dotted line in the addendum report from Professor Hayward) then the GPs agreed that this would essentially be levelling of the growth rate and would not be concerning.

Doctor Bint's oral evidence

Experience

298. Doctor Bint was a full time GP until December 2014. He then became a locum in order to balance his clinical commitments and his medico-legal commitments. He still does 1-2 days' clinical work a week. His medico-legal work is predominantly in the field of civil litigation where he receives instructions from Claimants and Defendants in approximately equal proportions. He also gives evidence in coroners' inquests and fitness to practice hearings. Recently he has been involved in some criminal cases in relation to gross negligence manslaughter.

299. Doctor Bint had done 6 months as a paediatric senior house officer. In that capacity he carried out a large number of examinations as part of his work. As a GP in full time practice he did one to two 6-8 week baby examinations a week. This has now reduced but he still does them from time to time.

Instructions and issues addressed

300. In his first report Doctor Bint made it clear that he was asked to comment on the likely actions of a GP, had the Claimant been seen by or referred to by a GP at a time in or between August 2012 until November 2012. Later in the report he made it clear that he did not, as a GP expert, comment on the actions of the health visitor. In the Court directions the Claimant had permission to obtain the evidence of an expert in general practice (namely Doctor Bint) on the issue of causation.

301. In his supplemental report when considering the Claimant's growth at age 6 weeks, he gave his opinion from a GP perspective and deferred to the health visitor expert as to whether it was unreasonable for the health visitor not consider the Claimant's growth as concerning.

302. In re-examination Doctor Bint reaffirmed paragraph 5 of his supplemental statement that, whatever arrangements are made locally, whoever undertakes measuring and growth assessment tasks, they should be completed to the same standard. There should not be a difference in outcome in terms of which babies are remeasured and which are referred, depending on whether it is a health visitor or a GP who undertakes the growth assessment. Doctor Bint said that all use the same charts and textbooks. Irrespective of who does the plotting, the outcome should be the same for the patient.

303. In Doctor Bint's local practice the GP does the entire 6-8 week check and health visitors do not do a 2 week head circumference measurement.

Head circumference measurement

304. Doctor Bint accepted that different people measuring head circumference could cause the dots on a graph to jump a little. If the trajectory crossed centile spaces or a centile space such that it indicated that it may cross centile spaces, then that was a crucial observation.

305. In his supplemental report Doctor Bint had said that growth between 2 weeks and 6 weeks of one centile space would fall in the middle between the expected line versus a highly unexpected and grossly abnormal line. Following a trajectory of an increase of one centile space in a month would mean that, within a few more weeks at the same rate of growth, it would then cross the second centile line and would mandate referral. He said that it was crucial to appreciate the duration between measuring dates. It could not be safe or reasonable practice only to measure two points at 4 weeks. If the line on such a measurement was heading towards two centile lines then that required monitoring.

306. As to the textbook, he said it was not a pass or fail. Clinical judgment was required. He believed that the textbook was requiring two measurements at 0-72 hours and 6-8 weeks. He agreed in cross examination that crossing centile spaces meant moving more than one centile space or band. In his first report, after quoting the extract from page 188 of the textbook, he had said that the important point about this was that in the Claimant's case the head circumference had crossed from the 25th to the 50th centile as of 8th August 2012. A remeasure at 4 weeks was what the textbook advised. He accepted that his report was not as clear as it might have been because the quotation from the textbook does not specifically state that. Nevertheless the overall message, he said, was that one should be looking for the normal and the abnormal. Therefore if there was a short duration between the two measurements and the line trajectory was heading for crossing two centile lines, there is no logic in drawing a close to further monitoring. In his report he had meant to reflect the context of the textbook message.

307. Doctor Bint said that if there had been a head circumference measurement at birth plotted on the 25th centile[50] and then the 8th August 2012 measurement had taken place

[50] i.e. theoretically bringing back to birth date the measurement in fact taken at 13 days.

6 weeks later and was on or just above the 50th centile, the gradient would have been much less steep than in fact it was over the 4 week period. It would have then been closer to following a centile line. Doctor Bint's opinion was that in those circumstances there would have been a spectrum of GP response. Some would accept that that trajectory was acceptable, some would remeasure. However the Claimant's centile line plots at 2 weeks and 6 weeks gave a very much steeper gradient.

308. Although there is nothing in the textbook that specifies a minimum period between the two measurements, Doctor Bint said that the analysis was based on a 6 week period in order to capture abnormalities. He accepted that the textbook did not say one should not rely on less than 6 weeks, but the earlier text was based on 0-72 hours and 6 to 8 weeks as being the relevant interval.

309. Doctor Bint also agreed that there was some variation in the language used in the textbook because earlier there had been reference to

> "a head circumference measurement in the neonatal period"

- when a neonatal period could mean anything up to 28 days from birth. He could not imagine that the textbook was accepting a first measurement at any stage from birth to 28 days. If one took the neonatal period of being up to 28 days and then a second measurement at 6 weeks, potentially the measurements would only be two weeks apart. That would be a period only one third as long as the 6 week period. It would mean that a head growth would have to be three times as fast within the 2 week period as over a 6 week period so as to make a comparison. Doctor Bint said that the textbook did not give guidance if measurements were done subsequent to 0-72 hours. It is difficult to produce a textbook which covers every scenario.

310. Doctor Bint said that if a birth measurement is not available but a 13 day measurement is available then, if the next measurement is at 6 weeks, such that the gap was only 4 weeks, a judgment call would have to be made. If at 4 weeks the line nicely followed a centile line or was parallel to one, that would be reassuring. If however the line was heading in another direction, then the only reasonable option is to continue the monitoring because otherwise one would not know if a second centile line would be crossed.

311. Where Doctor Bint worked it is unusual not to have the birth measurement. However if one does not have it then one looks at the actual plot at 6 weeks. One question to ask is to whether the head circumference and the weight are on the same centile. If there is concern then one would have to recommend reattendance after a further 6 week period for another head circumference measurement to be plotted. Doctor Bint agreed with Ms Gooch that the "red flag" of crossing two centile lines is not limited to the first 6 weeks. The crossing of two centile lines at any age is what is important. In the Claimant's case the trajectory over 4 weeks was heading towards crossing the second centile space.

312. The textbook states[51] that although the guidelines regarding head circumference monitoring are generally accepted in the UK, little is know about the accuracy, value, or optimal timing of regular head circumference measurement or the relative merits of different referral criteria. Doctor Bint said that this was under "Research" heading,

[51] Page 189.

being specific issues to be suggested for research. His understanding, based on the earlier part of the textbook, was that there is an evidence base for the two measurements at 0 and at 6-8 weeks. After that there is no evidence base for further measurement. The textbook expects a 6 week gap between the two measurements because it was considered that that would capture most abnormal growth patterns. There is no benchmark for a period of less than 6 weeks.

313. Doctor Bint considered that he was supported by the WHO document statement that head circumference centiles usually track within a range of one centile space, and after the first few of weeks a drop or rise through two or more centile spaces is unusual and should be carefully assessed.

314. Doctor Bint said that in his area the physical checks are all done by the GP. Here the health visitor did a lot of the physical checks, this being relatively unusual. In theory the GP just had to do the three physical checks which were in fact missed. It would have been unlikely for a GP to remeasure in this case unless there was a significant period between the health visitor's measurements and the GP check. If there had been more than a week difference, the GP would remeasure when monitoring the baby at the 6-8 week check because the GP would need up-to-date head circumference and weight measurements.

315. Doctor Bint disagreed with Ms Gooch when she had said that sometimes there is only one 6-8 week measurement and it is reasonable to do no more measurement in those circumstances. He said that it was crucial to assess the growth rate and to see whether it was as expected. It is impossible to establish with one measurement if a child is growing correctly or not. He did not agree that there was no useful purpose in doing a further measurement if the child appeared well. He said that there were two core parts of monitoring

    i) The physical check

    ii) Whether the child is growing as would be expected.

    The latter is a crucial part of the assessment because if, for example, the child is not growing properly or is growing abnormally then that child may need referral.

Correlation of head circumference and weight

316. Doctor Bint said he would look at the correlation between head circumference and weight. As a general principle children grow proportionally. If there is disproportion of growth that may indicate a problem. Head circumference out growing weight is a potentially very important disproportionality. With hydrocephalus as an example, there is increasing head circumference whilst the body grows normally. That indicates that there may be a problem with the head.

The missed 6-8 week GP check

317. Doctor Bint said that if the 6-8 week check is missed then important physical checks have not been done. These are of the heart, hips and testes. For example, it is important to identify that the testes have descended because, if undescended, they can render the child infertile and with a high risk of testicular cancer. Undescended testes can be

remedied within the first year by surgery. The only opportunity to examine this at the 6-8 week check.

318. As to Ms Gooch's evidence that there was no system for further reminders or later examinations if the 6-8 week had been missed, Doctor Bint said it was not a system issue. If a family is informed subsequently that they have not had the check, they can contact the GP for an appointment. That had happened a number of times in his experience. A health visitor had arranged a late 6-8 week check after it had previously been missed. In one case he had picked up undescended testes in the baby.

319. Doctor Bint accepted that it was the GP's responsibility to perform the check. He said that there is quite a lot of variation in GP practices. Some have a system to pick up a missed check. Some pick them up at the 8 week vaccination. Others rely on the co-ordinating role of health visitors. He said it would be better if there was a unified way of picking up the patients at risk of slipping through the net. Here the health visitors had access to the SystmOne computer. Many GPs would rely on the co-ordinating role of health visitors. He agreed that there should be a system for picking up a missed 6-8 week check.

320. In re-examination Doctor Bint was referred to the HCP where, under the heading "Multi Skilled Team Working" it states

> "delivering the HCP relies on the contribution of a broad spectrum of practitioners including GPs, practice nurses, midwives, health visitors, etc …"

On the next page under the heading "An agreed and defined lead role for the health visitor" the text states:

> "the HCP is a clinical and public health programme led by, and dependent on health professionals. Effective leadership is required to ensure that the various practitioners contributing to the HCP communicate with one another and provide a holistic, co-ordinated service tailored to the local needs. It is recommended that responsibility for co-ordinating the HCP to a defined population at children centre and general practice level should rest with the health visitor…"

Doctor Bint said that health professionals do not work in isolation. That is why the red book is produced. Also for those who use SystmOne, it is an integrated system so that it can be accessed by the different professionals.

321. If there is a missed 6-8 week appointment, all professionals share some responsibility, namely the GP and health visitors. In the present case Doctor Bint had looked at the GP involvement after 8th August 2012. He said there was a number of complicating factors. For example the first vaccination had been done by a health care assistant not by the GP. As to the later assessments, the GP may not have realised there had been a missed 6-8 week check.

322. Doctor Bint deferred to the health visitor experts as to whether it was unreasonable for a health visitor not to refer back when it was appreciated (or ought to have been appreciated) that the 6-8 week had been missed. He was simply saying it was a missed opportunity.

323. Doctor Bint accepted that there had not been a 4 month check, which is an unusual check additional to that normally required, unfortunately there is no unified system. The missed 6-8 week check can be picked up but this generally is on an opportunistic basis.

Other points in Doctor Bint's written evidence

324. Doctor Bint was asked about paragraph 3.05 of his first report where he said

> "I note the suggestion in the records that XM's parents were advised to make an appointment for medical assessment with their general practitioner for a 6 week check."

He was asked why he used the word "suggestion". He said that it was because he wanted to be impartial as he was aware there was a possible factual conflict on this.

325. At paragraph 3.08 of his first report he referred to the computer entry on 16th October 2012 that the Claimant

> "would attempt to lift his head in the prone"

He accepted that he could have referred also to the red book and that would have set it out more fairly.

326. In his supplemental report at paragraphs 6-9 Doctor Bint had said he was concerned by some of the evidence he had heard from Mrs Furmage in the witness box and that he disagreed strongly with some of what she said for the reasons he then gave. He was asked about this. He said he criticised Mrs Furmage from his perspective as a general practitioner. As a general practitioner the textbook and the red book apply to him as it they do to a health visitor. He disagreed with her. He accepted that what she said in evidence had essentially been in her witness statement. He had seen this before he gave his report. However Doctor Bint said that it was stark when listening to her evidence that the Claimant did not require further monitoring, and that if the 6-8 week check had been missed, general practitioners would not wish to see a well baby. He had previously expressed an opinion in discussions in the case but had deferred to Mrs Waters as the health visitor expert. He wrote the addendum because he was asked to give his opinion as a GP. That it is what he did in his supplemental report. It was not part of his original instructions to comment on health visitors. He was then governed by the remit of his instructions.

327. Doctor Bint confirmed paragraphs 7-9 of his supplemental report that an 8mm difference is significant in a tiny baby. He relied on the WHO growth charts for this. It was not about the absolute numbers but looking at the centile numbers plotted. In those paragraphs he was responding to the evidence he had heard that there had not been a significant change in the Claimant's head circumference.

328. In paragraph 24 of the supplemental report, he said that from a GP perspective the disproportionate growth in the head from the 25th to the 50th centile with the weight remaining between the 9th and 25th centiles, was something he said in his capacity as a general practitioner. He deferred to the health visitor expert as to whether it was unreasonable for the health visitor not to find this concerning.

329. In paragraph 25 of the supplemental report he had said that head circumference needs to be remeasured where there are abnormalities in growth identified. He agreed that there was no justification for repeated head circumference measurement in children growing regularly. He said that prior to the textbook by Hall, there were more health and physical checks and a lack of science underpinning them. Hall had cut back on a lot of the later examinations and measurements. Nevertheless if there is abnormal growth there must be a remeasure.

330. In re-examination, in relation to suggestions about Doctor Bint's independence which had been made in cross examination, he said that his opinion was very much his own opinion. He had a genuine concern when he heard the evidence that the Claimant would have slipped through the net again, i.e. nowadays; also that this might pass the message to parents that GPs would not see a healthy child if they missed the 6 week check. That is why he did the supplemental report on instructions.

Allegations in the Re-amended particulars of claim

331. Doctor Bint had dealt with this in paragraphs 26-39 of his supplemental report. He said that he had not been asked to deal with it before. He accepted that there was no material to guide the identification of an abnormally large head. Most of the time a visual assessment has a good chance of being unreliable. What he was trying to do was, through a GP's eyes, look back at how the child's head would have appeared. This was not new territory because he had originally had instructions to look at the GP occasions to notice opportunistically an abnormally large head.

332. Doctor Bint accepted that visual appreciation of disproportionality is difficult but at some point it becomes less difficult if there is a large difference between the size of the head and the body. He agreed that it was difficult to say what should have been obvious to spot in a baby wearing a nappy. However he said that the health visitors and nursery nurses had unanimously said that they would have spotted the abnormally large head if it had been as shown on the neurosurgeons' black line.

333. In paragraph 9 of the supplemental report Doctor Bint had expressed the opinion that the reasonable and experienced primary health care professional would be expected to identify, by visual observation alone, where the baby was fully undressed or in a nappy only, that there was something about XM that did not look right. He said in oral evidence that there were two avenues to explore: either a failure to put on weight or an abnormally large head. He said that familial large head would be a possibility. Once the health care professional became aware of the disproportionality, there was a need to explore the reason for it by head circumference measurement and weight measurement.

Doctor Bracey's oral evidence

Experience

334. Doctor Bracey's experience of measuring babies goes back many years. He had been a senior partner in general practice. He was appointed clinical medical director at the Royal Liverpool hospital and ran a baby clinic two to three times a week. He had measured babies for more than 40 years. He retired from full time practice about 14 years ago. As with Doctor Bint, the medico-legal work was overtaking him so he took the course to split his time between medico-legal and clinical work. He does locum GP work for many practices in the Liverpool area. He works for locum agencies. He sees what happens in multiple practices.

335. Doctor Bracey last did a 6 week assessment some 9 months ago. The reason for the gap is because of Covid. When he normally does his locum work, he sees babies as part of his 3 hour session. Some practices have a special developmental clinic. Others see babies as part of their general clinic.

336. Until the change of system in the early 2000s bringing in a new standardised programme, babies would be seen more often by the GP – at 6 weeks, 6 months, 1 year and 18 months. Now the new system has had to be accepted. Some have criticised it because babies are examined less. Previously, measuring a baby's head would be done in the hospital and not by the GP. The 6 week assessment was voluntary.

Head circumference measurement

337. Doctor Bracey said that the average GP would not know about the Hall textbook but from meetings and talks would know about the standards for developmental assessments.

338. Doctor Bracey agreed that normal growth would stay within a centile line. Expected rate of growth follows a trajectory which is on or parallel to a centile line.

339. On assessment by a GP the GP is looking for many things. The GP does not usually get involved in weighing. General practitioners would accept what the health visitor said about growth of head circumference and weight. Not all GPs can link to a computer which shows the plotted graph. Doctor Bracey said they did not have that system in Liverpool.

340. Health visitors see a baby many more times than a GP. The GP relies on the expertise of health visitors if they say that growth is steady and acceptable. It is difficult to say what "steady growth" means. One would have to ask the health visitor who wrote it. Generally the GP would not have the expertise to contradict what the health visitor said and would accept if a health visitor said there was steady growth. If the GP sees a baby at 6-8 weeks, he or she would do a physical examination but not necessarily look at growth. They would look at the whole baby. It would be a top to toe examination. The GP would look at the baby and if it seemed reasonably normal they would accept that. If they saw the baby naked apart from a nappy and the baby was in proportion, that is what they would be looking for. Very few GPs would weigh the baby. A GP would look at the red book centile charts. Before that they would look at the detailed entry by the health visitor. The GP would rely on the health visitor who indicated that everything was moving in an acceptable way. The GP is a generalist and accepts the expertise of allied health professionals.

341. Doctor Bracey was asked about the situation if at 6 weeks there was only one head circumference measurement. He said it was unsatisfactory because a baby with hydrocephalus would be missed. He said that the problem with the national programme was whether the GP would realise he had an obligation to remeasure in 4 weeks. He agreed it was unsafe for there to be just one measure but it depended on how one interpreted the recommendations. He pointed out that there was no facility in the red book to re-examine after 6 weeks. He accepted that the health visitor could re-examine if she wished and if she felt it was necessary. He said he thought that one would have to do a second assessment.

342. Sometimes it is the health visitor who assesses the head circumference. Sometimes it is the GP. The assessment can be made by either.

343. Doctor Bracey was asked about NIPE. He said he was himself trained to do a 6 week assessment for the baby. He was aware of the document. He did not think it changed anything but it truncated some matters. The document was then put to him in relation to certain extracts as follows:

i) "**Executive summary**[52]

> "Routine physical examinations of the neonate and 6-8 week infant is an integral part of the universal Child Health Promotion Programme. It has been carried out by NHS health care professionals for many decades, but apart from the NICE guidance on Postnatal Care summarising the content of the examinations and guidance in relation to developmental dysplasia of the hip, there has been no national guidance on the standards and competences necessary to deliver a good service. The newly launched Child Health Promotion Programme (DH 2008) sets the context for the examinations as do the NICE guidelines…"

Doctor Bracey accepted that in 2008 these documents set standards which had been part of practice. There was a push to standardise the basics. He said it was not always achieved. These were guidelines and not a mandate.

Doctor Bracey accepted that the use of the word "neonate" did not mean up to 28 days. He agreed with Doctor Bint that it meant up to 72 hours of age in this context.

Doctor Bracey said that the 6-8 week check was voluntary, not compulsory. GPs are paid to do it. However he accepted that it would be the basic national provision for there to be two examinations, one at 0-72 hours and the other at 6-8 weeks. He said that the standards were in part based on the textbook.

ii)[53] "The new born and 6-8 week examinations must be performed by practitioners who are trained and competent in the skills required… Skills should be practised and maintained with

[52] Page 4.
[53] Page 4.

an appropriate number of examinations performed to retain them…"

Doctor Bracey accepted the word "new born" and "neonate" were used interchangeably. He said that every GP should know what they should be doing. Every GP is trained. He also accepted that whatever the health care professional who does the examination and check, they have to be trained and competent.

ii) "The importance of offering and delivering highest quality routine care for infants up to 8 weeks of age is well recognised"[54]

Doctor Bracey agreed with this

iii) "Almost immediately a baby is born, they should have an initial examination to ensure they have no gross physical abnormalities."[55]

Doctor Bracey said that this was usually a very brief examination

iv) "Later, a comprehensive new born examination should be performed, ideally, within the first 24 hours of birth (Hall and Elliman 2006), and certainly within 72 hours"[56]

Doctor Bracey agreed with this and again agreed that 0-72 hours was what the Hall textbook meant by "neonate"

v) "Although screening is performed universally on all babies the standard set out in this document apply to **well babies only**.**"**[57]

Doctor Bracey agreed that was what the document said

vi) "These examinations should therefore be performed by a suitably trained and competent health care professional who has appropriate levels of ongoing clinical experience."[58]

Doctor Bracey agreed with this. He agreed that some aspects of the 6 to 8 week check would be carried out by a health visitor and some by a GP. He also agreed that no matter the qualification of the person doing the check, the check had to be to the same standard and the outcome for the baby should be the same.[59] The assumption was that a child had a reasonable standard of care that met the quality of care in NIPE. This was to be found in a later section of NIPE which states:

[54] Page 6.
[55] Page 6.
[56] Page 6.
[57] Page 7.
[58] Page 7.
[59] He qualified this at first by saying that the equipment might not be the same for example in head measurement a GP may not have the special measuring tape. Nevertheless, he said literature allows for either the specialist measuring tape that a health visitor has normally or a standard tape measure which some GPs would have. A baby can reasonably expect to have a proper measurement of head circumference though there could be perhaps up to 10% variation of measurement.

> "regardless of the health care professional's qualifications, background and experience, the standard, quality and content of the examination should be consistent throughout the UK (DH 2000)."[60]

The NIPE has a section "Part 6 general physical examination"[61] Doctor Bracey agreed that this examination was at 0-72 hours and repeated at 6-8 weeks and included plotting head circumference.[62] Under the same heading "measurement of weight and head circumference" are detailed.

344. Doctor Bracey accepted that in the Claimant's case the health visitor was required to weigh the baby, do the head circumference measurement and to interpret the results to the same standard as any health care professional doing the relevant checks. Interpretation of the rate of growth of head can be done by anybody doing the measurements, but the standard of care remains the same.

345. Doctor Bracey was taken through the answers to question 2 in the second joint statement. In this extract I have numbered the four paragraphs of the answers. Because of the responses of Doctor Bracey on this line of questioning, the section needs to be set out in full as follows:

> "*2 whether an increase in head circumference from 25th to 50th centile over a 4 week period represents a departure from the expected rate of growth*

i) The experts state that usually one expects the rate of growth to roughly follow the same trajectory and therefore be on or parallel to a centile line

ii) Doctor Bint states that movement from the 25th to the 50th centile line in 4 weeks is therefore not an expected rate of growth and is more growth than one expects. Whether it was significant or not would depend on a third measurement and what centile trajectory that third measurement generated.

iii) Doctor Bracey considers that in 2012 some GPs would consider this rate of growth to be a significant concern but that there would be other GPs who would not consider it to be significant in view of the fact that the head circumference was still only on the 50th centile. This is also given that the 2009 Royal College of Paediatrics and Child Health Advice on plotting and assessing infant and toddler growth was that if there is a fall or rise through two or more centile spaces, the child should be carefully assessed.

---

[60] Page 8.
[61] Pages 34-35.
[62] Doctor Bracey said that the HCP page 38 under the heading "Birth to 1 week" did not specifically require a head circumference measurement. It did require "comprehensive new born physical examination to identify any anomalies that present in the new born." It then gave examples. He accepted that the components of the general physical examination were set out in NIPE and also in NICE.

iv) Doctor Bint simply points out that a GP won't know if this trajectory is heading towards crossing a second centile without a further measurement in around 4 weeks."

346. Doctor Bracey reaffirmed i) above

347. As to ii) Doctor Bracey accepted that normally, based on the Hall textbook, there would be at least a 6 week gap between measurements. A 4 week gap made interpretation more difficult. Doctor Bracey accepted that anybody interpreting should know what the textbook said or what the recommended standards were. He said that the recommended standard was mainly over two centiles which could be at any time. He said that the Claimant could have crossed two centiles a week or two after the 8th August 2012 examination. He then accepted that the purpose of the measurement at 6-8 weeks is to identify those babies who may have an abnormality or enlargement of the head. The test was to identify those children.

348. It was then suggested to Doctor Bracey that if you were going to provide a reasonable standard of care you cannot shorten the period between the two head circumference measurements. At that point he said he saw what counsel meant. The way he had looked at it was that growth between the 25th and the 50th centile was such that a GP might consider reasonably normal. Seeing the two dots, it could be that because they were within one centile it was reasonable for some GPs to consider that acceptable and some to consider it differently. However he would have to agree now with Doctor Bint about the steepness of the gradient if there was only a 4 week gap. Assessing the rate of growth required looking at two axes, namely the amount of the growth and the period of time along which it took place.

349. Doctor Bracey accepted that health visitors and other health professionals are trained to look at a first measurement at 0-72 hours and then a second measurement of 6-8 weeks. The benchmark was crossing two centile spaces in that time period. That was what the textbook and NIPE were based upon. If one shortened the period of time but only looked at if two centile spaces were crossed, one would miss those children who crossed two centile spaces at 6 weeks but not at 4 weeks. Doctor Bracey said he thought that he had overlooked the part of question 2 that said "over a 4 week period". He had considered it differently and he then agreed with what counsel was putting to him. He had just been considering one dot on the graph to the other and taking account of what the health visitor had thought and then putting two and two together.

350. Doctor Bracey accepted that the growth of one centile space over 4 weeks must be of concern to any health care professional because one does not know of the additional growth in the other two weeks. The textbook does not provide a guide for growth over 4 weeks. He accepted that a health care professional should say that they did not know the rate of growth in 0-6 weeks and if growth continues at that rate two centile spaces could be crossed and that is a concern. If the trajectory over 6 weeks did continue as steady then the 75th centile would be crossed very soon. The only way the trajectory would avoid crossing two centile lines very soon would be if it flattened very considerably.

351. Therefore, after cross examination, Doctor Bracey accepted what Doctor Bint had said at ii). He retracted what he had said at iii) on the basis that he had not previously registered the 4 week point.

352. As to iv) he agreed with what Doctor Bint had said.

353. Finally Doctor Bracey said that speaking as a GP, any competent GP would accept that not to remeasure with only two measurements of the head circumference 4 weeks apart and where they were in fact plotted on the graph was not competent. Further, that any health care professional trained to do the assessment should comply with one single standard, regardless of who the professional is. All professionals would use the same base materials or training based upon them. It should not be happenchance whether the data is interpreted by a health visitor or GP.

The standard of care – health visitors

354. In assessing the standard of care for a health visitor in this case, the evidence to which I have regard is as follows:

i) The HCP, the WHO document, the SOP and NIPE.

ii) The evidence of Mrs Waters and Ms Gooch.

iii) The evidence of Doctor Bint and Doctor Bracey.

iv) The evidence of Mrs Furmage and Mrs Kirkpatrick.

Further citations from NIPE

355. I have already set out in some detail relevant passages from these documents. The NIPE citations which were put to Doctor Bracey are contained in the section on his oral evidence. It is necessary to set out some further citations at this point.

> "**Executive Summary**
>
> …. this document concentrates mainly on pathways standards and competences for the screening components of the examination, namely examination of the hips, eyes, testes and cardiovascular system, but also includes, in less detail, the remainder of the examination. It should be useful to both providers and commissioners of the service…..[63]
>
> …
>
> **Introduction**
>
> This document describes standards for clinical care and professional competences required for health care professionals (HCPs) who undertake physical examination of new born babies and the 6-8 week infant examination.
>
> It is of relevance to

[63] Page 4. The screening components of the examination are done by GPs. As to the remainder of the examination, it is clear from the evidence reviewed so far and below that health visitors or GPs can carry out relevant parts.

– health care professionals who work in the acute and primary health care sectors who have direct contact with postnatal women and their babies….

…

Who provides clinical care for new born babies and infants?

Care is likely to be provided by midwives, health visitors, general practitioners and health care support workers working across the acute and primary care sectors. Paediatricians may also be involved with some babies.

Professional competence

Competence is an outcome: it describes what someone can do. In order to measure reliably someone's ability to do something, there must be clearly defined and widely accessible standards through which performance is measured and accredited. (NIACE 1989)

All health care professionals working in the NHS should be working to the level of competency as defined by their professional qualification, and should ensure that if they do not have the appropriate competency for a particular aspect of care, that they make appropriate referral.[64]

New born and 6-8 week infant physical examinations

……

Who should carry out the examinations?

"The professional qualification of the person (s) delivering the various aspects of this programme is less important than the quality of their initial and continuing training, audit and self-monitoring". (Hall and Elliman 2006, p337)

The need to standardise clinical practice and improve quality has led to several strands of work by the UK National Screening Committee around standards, competences, training resources, information for parents and professionals, and information systems

…

These examinations should therefore be performed by a suitably trained and competent health care professional who has appropriate levels of ongoing clinical experience."[65]

[64] Page 5.
[65] Page 7.

> **Competences of health care professionals carrying out the examinations**
>
> The new born examination is most often carried out by junior doctors, and in some areas, by midwives or advanced neonatal nurse practitioners. The physical examination at 6-8 weeks is usually performed by GPs or community paediatricians in conjunction with health visitors.
>
> Midwives and nurses are required to achieve post-basic learning, work in a framework of professional supervision, and maintain competence to carry out the physical examination and screening of the new born and 6-8 week infant….
>
> Regardless of the health care professional's qualifications, background and experience, the standard, quality and content of the examination should be consistent throughout the UK (DH 2000)… "[66]

The SOP

356. Page 7 of the SOP says that the 6 week contact, being assessment of 6 week developmental review/maternal mental health, may only be delegated between the health visitor and the GP. From the table on page 18 of the SOP[67], the health visitor is responsible for plotting naked weight and head circumference on the centile chart in the red book, assuming that the 6 week examination has not already been done by the GP. This is done to ensure growth along expected centile lines in relation to growth potential and earlier growth measurements. If there is a concern in relation to rapid head growth then the health visitor should consider hydrocephalus and urgent verbal/written liaison with the GP should be made for assessment.

357. This follows the SOP's earlier requirement, at the initial health visitor assessment at 10-14 days age[68], requiring the health visitor to obtain naked weight and head circumference and plot them on the centile chart. The reason for this is to gain baseline measurement in which future growth can be measured[69]

358. It is clear from the SOP that the health visitor was required, in the context of this case, to obtain a head circumference measurement at the initial contact and at the 6 week contact. Further, she was required to plot the head circumference on the centile chart, to interpret the head circumference size so as to ensure that its growth was along expected centile lines, considering future growth potential and earlier growth

[66] Page 8.
[67] See at [45] above.
[68] The SOP at page 7 says that this contact cannot be delegated. It must be done therefore by the health visitor.
[69] This rationale continues but "for interpretation should be compared with birth weight". Nevertheless on the evidence the head circumference was clearly to gain a baseline measurement for the ability to measure future growth.

measurements and, if she was concerned about rapid head growth, to consider hydrocephalus and urgently refer to the GP.

359. I accept that one must be aware of the different level of qualification, training and experience between a health visitor and a GP. Some of the allegations made against the Defendant are matters exclusively within the domain of health visitor expertise. However, Mrs Furmage, when doing the initial contact and the 6 week check, had to perform her tasks to the standard of the competent health care professional charged with those duties. She was not required to make a diagnosis. She was required to be aware of, follow, and competently interpret the guidance which is crystallised in the textbook and the SOP.

360. Page 18 of the SOP requires urgent liaison with the GP if there are concerns about hydrocephalus. After that point, i.e. considering potential diagnosis and referring to a specialist, the expertise becomes that of the general practitioner. Up to that point the same standard is required of whichever health care professional measures the head and does the initial interpretation of the results. All this flows from the fact that the documentation provides for: (i) one standard of care to that point, (ii) the possibility that it is not just general practitioners who will carry out those elements and (iii) in this case, the Defendant's SOP envisaged those material parts of the general physical examination being carried out by the health visitor and to be her responsibility.

361. The HCP is also relevant, particularly those extracts at pages 18-19, under the heading 'Health and developmental reviews'[70].

362. This conclusion, apart from being clear from the documentation, is entirely consistent with:

(i) Mrs Furmage's evidence, e.g. as summarised earlier in this judgment under the headings "Responsibility for 6-8 week check" and "Head Circumference Measurements"[71]. It is also to be recalled that Mrs Furmage said that she was not suggesting that the GP check was a safety net in case she made a mistake.

(ii) Mrs Kirkpatrick's evidence, e.g. as summarised under the headings "*Practice and Procedure at and prior to 2012"* and *"15th October 2012 – Head Circumference Measurements."*

(iii) Mrs Waters' evidence.

(iv) Doctor Bracey's evidence. He had been involved in measuring babies' heads for 40 years. He also said that interpretation of the rate of growth of the head can be done by anybody doing the measurements, whether GP or health visitor, but the standard of care remains the same. At one point he said that GPs would rely upon the health visitor if she indicated that everything, including the head circumference measurement, was moving in an acceptable way.

(v) It should not be permissible that when head circumference measurements are taken and given an initial interpretation by a health care professional, a baby

[70] See at [36] above.
[71] Cf also paragraphs 15-16 and 20 of her statement.

should expect a lower standard of care if a health visitor carries out those tasks than if the GP does so.

(vi) The citations from the authorities[72] of *Wilsher* and *Darnley* and the specific extract from *Clerk & Lindsell: "The nurse must thus attain the standard of competence and skill to be expected from a person holding their post. The more skilled the job undertaken by the nurse, the higher the standard of care expected".*

363. On the question of the standard of care to be expected by a health visitor in terms of measuring head circumference and carrying out an initial interpretation of measurements of head circumference, I therefore accept Miss Gollop QC's submissions that there is one standard of care, regardless of the qualification or post held by the health professional responsible for the task. It follows that on this particular point the evidence of both the health visitors/nurses and the general practitioners is material as to whether or not there was a breach of duty. This is notwithstanding the fact that in the case management Order of 19th October 2018 the general practitioners' remit was limited to causation. The evidence of both was fully explored on the issue of breach of duty and, for the above reasons, I must and do take it in to account.

364. It also follows from all the evidence (the relevant documents, the other three relevant expert witnesses and the evidence of Mrs Furmage and Mrs Kirkpatrick) that I reject the suggestion by Ms Gooch that the health visitor would do the measurements and the GP would interpret the growth measurements, though she did add that the health visitor would not "switch off her interpreting brain".

365. Mr Todd QC submitted that health visitors carry out a more mechanistic set of tasks, detailed in advance for them, and that essentially they go through a "tick box exercise". Tick box exercises can be of assistance. Nevertheless, they do not absolve health care professionals of their duties or from exercising professional judgment. In carrying out head circumference measurements and interpreting them in accordance with the textbook and the HCP, the health visitor owes the same duty as any health care professional (general practitioner or otherwise), in particular as to whether there was a concern about rapid head growth such that the possibility of hydrocephalus should be considered and further steps taken.[73]

366. The primary sources of information as to the relevant standard of care were Hall and the HCP. The latter document contained the references to the WHO document and to the textbook. It may be that health visitors would not read NIPE. There is nothing inconsistent between NIPE and the other documentation. NIPE is an important document in assisting as to what can be expected of health care professionals generally for the various tasks that are undertaken, particularly where they may overlap.[74]

---

[72] See [34] above.

[73] cf HCP page 18 at [36] above.

[74] It is noteworthy that the members of the relevant sub-groups which gave rise to a NIPE are set out at pages 57-59 of that document. The sub-groups on developmental dislocation of the hip, congenital heart defects and undescended testes did not contain any health visitor representation. The members of the new born and 6-8 week infant physical examination sub group and the members of the child health sub group did each contain a (different) representative of the Community Practitioners' and Health Visitors' association.

367. The Court was not provided with evidence as to the specific training which the Defendant gave to health visitors (or nursery nurses). It is to be noted in this regard that Hall[75] states that "Staff training in measurement technique, the interpretation of growth charts….normal growth and its variants….is vital".

Nursery nurses – standard of care

368. The standard of care to be expected from the nursery nurses Mrs Makwana and Mrs Hewitt is not the same as that expected from a health visitor:

i) Nursery nurses, despite their title, are not qualified nurses.

ii) The nursery nurse role is a delegated role. Specific work is allocated by the health visitor in charge.

369. Nursery nurses are not expected to carry out the initial contact at 10-14 days or any aspects of the 6-8 week check. They are not qualified to measure head circumference or to interpret head circumference measurements.

370. A helpful summary of the role of nursery nurses is to be found at page 6 of the SOP where it states:

> "Community Nursery Nurses (CNN) are not qualified or registered nurses. They have undertaken a national recognised nursery nurse qualification to a minimum of level three. They work within a health visiting team, undertaking many aspects of the healthy child programme which have been delegated to them by the Named Health Visitor (Community Nursery Nurse Competency framework and guidelines for practice 2010)"[76]

371. Insofar as criticism is made of Mrs Makwana and Mrs Hewitt, I will deal with that later in this judgment.

Breach of Duty: 8th August 2012

Introduction

372. The particulars of negligence in respect of this allegation have been summarised at paragraph 14 (i) of this judgment. The Claimant's case is that Mrs Furmage fell below the standard reasonably to be required of her by failing to realise or act upon the fact that, albeit not crossing centile lines, the Claimant's head circumference was on a steep upward gradient, having crossed a full centile space and that this was in a 4 week, rather than 6 week, period.

373. The Hall textbook is the seminal text which informed the other relevant documents which have been cited.

374. It was common ground that:

[75] Page 186.
[76] I was not taken to the 2010 CNN framework and guidelines for practice.

i) Head circumference should be measured at birth or within 72 hours of birth.

ii) That was not done, or not recorded, in the Claimant's case. That sometimes does happen.[77]

iii) The Defendant's SOP requiring measurement at 10-14 days is unusual.[78]

iv) The central text from Hall requires a birth head circumference measurement and a head circumference measurement subsequently at approximately 6-8 weeks of age.[79] The next bullet point merits repetition:

> - "If the growth line is crossing centiles upwards and the child shows symptoms or signs compatible with hydrocephalus or other abnormality, specialist opinion is essential. If there are no accompanying symptoms or signs, two measurements over a 4-week period are acceptable. Beyond this time limit, a decision must be made to either accept the situation as normal or to refer the child for specialist examination."

v) Mrs Furmage measured the head circumference at 13 days and at 6 weeks. The head circumference moved in that period from being on the 25th centile to just above the 50th centile.

The Claimant's case

375. On all material points there was agreement between Mrs Waters, Doctor Bint and Doctor Bracey.

376. Hall[80] describes the birth head circumference measurement as

> "an important measurement" which "should be performed and recorded carefully."

The next bullet point requires that the head measurement should subsequently be taken at approximately 6-8 weeks of age. The evidence from these three expert witnesses was that the birth measurement was an important baseline. Ms Gooch said that quite a lot of children do not have a birth measurement. Nor do they have one at 14 days, as provided by the SOP. Therefore there is no "baseline" measurement for such children. The fact that it occurs that birth head circumference measurements may not be taken or recorded cannot detract from the evidence of the Claimant's experts in conjunction with the clear message from the textbook as to what should be done. This message is reinforced by Hall[81] stating that the neonatal (i.e. on agreed evidence of all experts within 72 hours of birth in this context) measurement is a "..baseline measurement which may

[77] Mrs Furmage said that most of the time there would be a birth head circumference measurement in the red book. Mrs Kirkpatrick said it was a small minority who did not have birth head circumference measurement in the red book. Mrs Waters', Ms Gooch's and Doctor Bint's evidence on this is recorded at [207], [246] and [311] respectively.
[78] Ms Gooch said unique in her experience.
[79] Pages 187-188 at [49] above.
[80] Page 187
[81] Page 185.

occasionally be useful if there is thought to be rapid head growth in the early weeks of life."

377. Mr Todd relied upon the final bullet point in Hall[82] that, although the head circumference monitoring guidelines are generally accepted in the UK,

> "little is known about the accuracy, value, or optimal timing of regular head circumference measurement or the relative merits of different referral criteria."

I do not accept his reliance on this point for a number of reasons:

i) As Doctor Bint (and Mrs Waters) said, this bullet point is under the sub-heading "Research", suggesting specific issues for further research. The context of that bullet point is such that it in no way undermines the earlier references in Hall to the requirement for birth and 6 week head measurement. I accept Doctor Bint's evidence that there is an evidence base for these two measurements. The HCP[83] the WHO document[84], and the NIPE[85] all required birth and 6-8 week examinations including measurement of head circumference.

ii) Doctor Bracey (and Ms Gooch) said that before Hall babies were measured and assessed more frequently. The Hall textbook limited monitoring of head circumference to two measurements for well babies, i.e. absent indications for further measurement.

378. Mrs Furmage did not have a 0-72 hour head circumference measurement available to her, for whatever reason. What she did have were her two measurements taken 4 weeks apart. There was conflicting evidence as to how those two measurements presented. Mrs Waters said there was quite an extreme picture for a gap of 4 weeks. She also described it as a steep curve. Doctor Bint in his supplemental report said that growth of one centile space in this period fell in the middle between the expected line and a highly unexpected and grossly abnormal line. It was in this context he said that it was crucial to appreciate the duration between measuring dates. Doctor Bint also said that this movement from the 25th to the 50th centile line in 4 weeks was not an expected rate of growth and that it is highly unusual for a baby's head to increase by one centile in a 4 week period. Whether or not it was significant would depend on a third measurement. Doctor Bracey agreed with that in cross examination. Mrs Furmage said that she did measurements of children day in and day out and there was nothing in the Claimant's measurements that alarmed her. She said that she saw movement of a full centile space between 2-6 weeks fairly regularly. She stood by her description of the head growth as "steady gain". Mrs Kirkpatrick said it was normal for a child to move across one centile space. Ms Gooch said that if the baby did not cross two centile lines then it was considered to be normal, even if the measurements were over a period of 4 weeks.

---

[82] At page 189.
[83] Pages 18 – 19. At page 18 the 'core purpose of the health and development reviews' included to 'assess growth' and 'detect abnormalities'.
[84] Page 7.
[85] Page 6. In the context of the birth and 6 week examination, NIPE says: "There is no optimal time to detect all abnormalities (Sherratt 2001). The ages recommended are based on best practice and current evidence."

379. Underlying this dispute is the question of whether there was a required 6 week minimum period between head circumference measurements. Before dealing with that, it should be recorded that Doctors Bint and Bracey agreed that usually one expects the rate of growth to follow the same trajectory and therefore be on or parallel to a centile line. Mrs Furmage did not accept this and said that about 50 percent of the children in her experience had a wide range of variation. Mrs Waters backed up the agreement of the general practitioners by referring to page 7 of the SOP which refers to

> "ensuring growth along expected centile lines in relation to growth potential and earlier growth measurement."

Mr Todd QC submitted that the apparent difference here is between on the one hand what one might normally expect to see and, on the other, what might be worryingly abnormal or a potential red flag. He said that it was the latter on which the Court should focus. No trajectory was put before me on the basis of taking the measurement at 13 days and plotting it as if it had been the birth measurement, though clearly the trajectory line would have been flatter. Nor am I required to decide whether or not there would have been a breach of duty had a full centile space been crossed but over a period of 6 weeks. What I have to decide is whether there was a 6 week minimum period in order to rely upon the two plots actually made and whether, considering that the plots were only over a 4 week period, Mrs Furmage breached her duty of care in not requiring a further measurement or referring the Claimant for medical opinion.

380. The Defendant submitted that if Hall had intended there to be a minimum interval of 6 weeks between the two relevant head circumference plots, he would have said so. I do not accept this. It is clear from Hall and the other documentation based upon Hall (NIPE, HCP and WHO) that what was expected were two measurements over a 6 week period. In that context, and as emphasised by Doctor Bint, Hall says[86]

> "these apparently straightforward monitoring procedures must not be regarded as simple screening tests. Skill and judgment are required in deciding how to interpret the measurements and no single pass-fail criterion can be proposed."

381. The textbook and other base documents cannot provide for every circumstance. It is necessary to use skill and judgment if, as here, there was no birth head circumference measurement taken/recorded. The expert evidence for the Claimant, and Doctor Bracey, was wholly consistent on this point. I do not repeat it here, having set it out in detail already. A reasonable standard of care required that when assessing head circumference growth the basis of the 'red flag' of crossing two centile lines was two measurements which were 6 weeks apart.

382. From the evidence of Mrs Waters, Doctor Bint and Doctor Bracey it was clear from the line which could be plotted between the 2 week and 6 week measurement that, had the line continued on the same trajectory, it was heading towards crossing the second centile space. The black line shows it as crossing at 8-9 weeks i.e. 22nd - 29th August 2012. Only by carrying out a remeasure would it be possible to know whether with a period of 6 weeks between two measurements the Claimant would have crossed two centile lines. The trajectory of the Claimant's measurements as plotted, coupled with

[86] Page 188 last bullet point.

the fact that they were over a period of 4 weeks and not a minimum period of 6 weeks, required a health professional, including a health visitor in Mrs Furmage's position, either to re-measure such that there was a minimum period of 6 weeks between two plots or to refer the Claimant to the GP .

383. The Defendant made a number of points against this finding.

384. First they said that this proposed reading of Hall excessively strained the textbook. I do not accept this for the reasons I have already given.

385. Secondly that it is inconsistent with the WHO document[87] . I do not see any inconsistency between the WHO document and my finding. This statement should be seen in the context of the earlier statement in the WHO document to measure head circumference "around birth", at the 6-8 week check and at any time after that if there are any worries about the child's head growth or development"

386. Thirdly it is said that this is at odds with the absence of centile lines on the first two weeks of the graph after 2009. It is correct that the WHO document described no centile lines between 0 and 2 weeks as a "key new feature". No explanation is given as to why this was done. Nevertheless on the same document[88] plotting is required of birth weight (and, if measured, length and head circumference) at age 0 on the 0-1 year chart. The use of the words "if measured" is not explained, but may be an acknowledgement that sometimes this is not done. There was provision in the red book for plotting the birth head circumference on the graph and a vertical axis related this to the centile at that age.[89] Therefore the head circumference could be plotted at birth and it would be known then whether two centiles had been crossed if the next measurement was done at 6-8 weeks. No expert suggested that a health visitor or other health professional could not tell what centile line the head circumference measurement at birth would be, even without the 0-2 weeks centile lines specifically plotted on the graph.

387. Fourthly it was said that a 6 week minimum period was at odds with the evidence of Mrs Furmage, a very experienced health visitor. It was also accepted by Mrs Waters that from the entries by Mrs Furmage in the red book it appeared that she had generally done a very thorough job in her examinations. In this regard:

    i) Mrs Furmage said that most of the time there would be a measurement at birth entry in the red book. That was clearly her experience. Therefore, for a period of some two and a half years when she was employed by the Defendant, commencing in March 2010, on the majority of occasions she would be assessing the rate of growth between the birth measurement and the 6 week

[87] Page 13. "Head circumference centiles usually track within a range of within one centile space. After the first few weeks a drop or rise through two or more centile spaces is unusual (fewer than one percent of infants) and should be carefully assessed."
[88] Page 8.
[89] In final submissions Mr Todd QC noted that the figures on the vertical axis in the red book did not seem to coincide with the growth charts in the WHO document. Nothing can be made of this since it was not addressed in the evidence. There are possible theoretical explanations.

measurement with the advantage of a further 10-14 day measurement in between[90].

ii) Therefore her evidence as to what she found to be normal over a 4 week period is probably based on a very limited number of cases. It is also of note that in her statement she does not make reference to the fact that the Claimant's birth head circumference measurement was not available. It is probable that she gave no consideration to whether a period of 4 weeks between measurements was any different to a period of 6 weeks between measurements, as at 8th August 2012. She appears to have looked at two measurements and considered that the fact that two centile lines had not been crossed was sufficient to decide that the head growth was normal. She did not consider the period of growth over which it had occurred.

iii) The Court had no disclosure of any training materials used to train Mrs Furmage. This is not a criticism. It does mean that, whether through her own fault or lack of training, Mrs Furmage's focus was shifted in this case to joining two dots only 4 weeks apart. That she had not at any stage prior to trial considered the potential significance of this undermines the quality of her evidence on this point.

Ms Gooch

388. Finally, what of Ms Gooch's evidence? Following the test in *Bolitho, C,* and *Williams* – and being fully aware of the relevant thresholds – I am afraid that I find Ms Gooch's evidence on this issue to be illogical and not representing a body of opinion which is responsible, reasonable and respectable. I say that for the following reasons:

i) Her evidence is at odds with the textbook and other relevant documents, sensibly construed.

ii) Her evidence is at odds with the three other experts, namely Mrs Waters, Doctor Bint and Doctor Bracey

iii) Ms Gooch accepted that if the health visitor did the head circumference measurement at 6 weeks, she then had to plot the measurement. She also accepted that all visitors who do head circumference measurements at 6 weeks will look to ensure that growth is along expected centile lines, looking to the future and with reference to the past. Nevertheless she said that even if there had been no birth head circumference measurement and no measurement at 14 days, such that there was only one 6-8 week measurement, there would be no requirement to carry out a second measurement. She agreed that this meant there would be no assessment of head circumference growth at all for such children, since one measurement in isolation gave no indication of growth or rate of growth. She did not agree that care would be below standard if a health professional did not require at least two head circumference measurements. Not only does this run counter to all the documentation to which I have referred, it also requires that for the small percentage of babies who have hydrocephalus

[90] This notwithstanding the fact that the SOP does not emphasise the birth head circumference measurement and refers to the 10-14 day measurement as a 'baseline'.

which is difficult to spot/diagnose because symptoms and signs can often present when it is too late, those babies will fall through the net. Of course, even with proper care, some babies may fall through the net, but there can be no doubt that performing one measurement only, and accepting that as a proper standard, cannot be contemplated as reasonable care in light of all the other evidence.

iv) She maintained this position whilst agreeing that there was no maximum period in which crossing two centile spaces would be regarded as not of significance.

v) Ms Gooch was adamant that there was no minimum period between any two measurements. Therefore the 4 week period in the Claimant's case was acceptable. When asked about a possible two week period, she then said that professionals would not leave such a small gap. As Ms Gollop QC pointed out, a head which would cross two centile spaces in 6 weeks would have to grow 50% faster to cross two centile spaces at 4 weeks.

389. It may have been that Ms Gooch's evidence was unduly influenced by her opinion that it was a "historical artefact" that in the UK we concentrate on measurements, including head circumference, and that the practice continues even though it is not particularly effective. In this regard the clear body of evidence, both from the other experts and the documents, is that it is important to have two head circumference measurements 6 weeks apart so as to determine whether two centile lines have been crossed in that minimum period. On the agreed evidence as to causation, two measurements six weeks apart would have saved the Claimant from suffering his devastating injury.

Other submissions of the Defendant

390. I shall now deal briefly with some submissions made by the Defendant.

391. First it was said that the 6 week period was first raised by Mrs Waters in her evidence in chief. It was submitted that this evidence therefore arrived late in the claim. Also, that Mrs Waters had made errors in her report that the head circumference had crossed two centile lines in the 4 week period and about the rate of absolute growth in that period. It is correct that Mrs Waters had made errors. However the pleaded case, and the case specifically put to Mrs Furmage, was about rate of growth of head circumference and the period over which she had measured as compared with the 6 week period in the textbook.[91] The errors Mrs Waters made are of some concern. However, I have carefully considered them in the context of the evidence as a whole, both documentary and from the other witnesses. Despite those errors it is clear to me that the essence of her evidence in relation to the 6 week check must be accepted as correct.

[91] The original particulars of claim at [16] and [20] was correct as to the claimant's head circumference centiles on the graph. In fact, to demonstrate the problem of being exact as to centiles, reference was made to the defence which in its original form said that the 8th August 2012 measurement was "the 50th centile". This was February 2018. In the amended form it said it was "just below the 50th centile"; this was December 2018. In its reamended form it said it was "just above" the 50th centile. These are all at [18] of the RAD.

392. Next the Defendant criticised Doctor Bint. I have set out the basis of those criticisms in full earlier in this judgment[92]. There is nothing in that section of the cross examination which causes me to doubt the reliability of Doctor Bint on this point, and generally.

393. Finally, the Defendant relies upon the passage in Hall and Ms Gooch's evidence that a much more common cause of head enlargement is a familial large head. The fact that familial large head may be a more common explanation does not detract from the need carefully to follow the guidance so as to take reasonable steps to detect potential serious pathology. This possible explanation was not one which Mrs Furmage proffered for her not carrying out any further steps after her 8th August 2012 examination. Further, the passage from Hall relied upon[93] follows paragraphs under the same sub-heading. These paragraphs say that the routine measurement of head circumference is intended to aid the detection of disorders characterised by large (and small) heads, one disorder characterised by a large head being hydrocephalus.

394. The Defendant submitted that Hall[94] talks "about 2 further measurements in a 4 week period in a case where centiles are being crossed upwards, indicating (according to Ms Gooch) that a four week interval is sufficient". The parenthesis in this submission is important. The submission is ill-founded. There is no logic in comparing the 6 week period for two baseline head circumference measurements and the 4 week period for two remeasures subsequent to those measurements crossing two centiles. This illogicality is, if anything, additional support for my not accepting Ms Gooch's evidence.

395. There was a great deal of evidence about the correlation between the weight and head circumference. I have referred to this in my review of the evidence. I shall return to it when considering the position at October 2012. It is not something upon which I rely in respect of this allegation of negligence. At most it would be a "makeweight" point.

Causation

396. Having found that there was a breach of duty by Mrs Furmage on 8th August 2012, there is no issue as to causation. The Defendant accepts that the effect of the GPs' agreed evidence that had there been a referral on or after 8th August 2012 the outcome would have been a remeasurement, diagnosis and successful treatment.

Summary on breach of duty 8th August 2012

397. I find that there was a breach of duty of care as at 8th August 2012. Mrs Furmage fell below the reasonable standard of care to be expected of her. She should have arranged to have the Claimant's head re-measured in the weeks following her visit. Alternatively, she should have referred the Claimant for medical opinion. I agree with Miss Gollop QC's submission that Mrs Furmage's errors did not result from inexperience, lack of time or a slapdash approach. They flowed from a lack of understanding of the Hall (and other documentary) guidance and a failure to use skill and judgment on the point which sadly turned out to be critical in the Claimant's case.

---

[92] In the section of Doctor Bint's oral evidence under the sub-heading *'Other points in Doctor Bint's oral evidence'* at [324]-[330].
[93] Page 184.
[94] Page 188.

398. The claim therefore succeeds in full, causation not being in issue once breach of duty is found proved. It is right, however, that I properly consider the other allegations in some detail.

The Missed GP check at 6-8 weeks

399. It was not alleged in the Particulars of Claim that the there was any breach of duty by the Defendant in failing to advise or remind the parents of the need to see the GP at 6-8 weeks. This was proper since there is persuasive evidence that they were reminded on more than one occasion. It is not known why for some reason they did not arrange this appointment. I find that there must have been some confusion on their part, or that they intended to make the appointment and it slipped their mind. They are conscientious parents who had a good record of making and keeping appointments with healthcare professionals.

400. The RAPC alleged that at all times after the Claimant attained 8 weeks of age, and specifically on 8 October 2012, 15 October 2012 and 13 November 2012, the Defendant filed to identify that he had not had the GP part of the 6 week check and failed to arrange for him to see the GP or advise the parents that he needed to be seen by a GP.

401. The main focus was on Mrs Kirkpatrick's 4 month check on 15 October 2012. This was appropriate since, given the delegated duties of a nursery nurse, and their more limited training, I do not accept that it could be properly argued that they were in breach of duty in this regard[95].

402. Mr Todd QC submitted in closing that, had the parents been reminded by Mrs Kirkpatrick on 15th October 2012 about the missed 6 week GP check, I should find that, on the balance of probabilities the parents would not have taken him. This was on the basis that they had not followed previous reminders and prompts. I find that the parents probably would have taken him had they been reminded, particularly if the importance of the GP check had been conveyed to them at that date. This was a one-off failure as at August 2012. In any event this matter was never put to the parents in cross examination.

403. The central question is whether Mrs Kirkpatrick was under a duty of care to remind the parents.

404. The Defendant placed a great deal of reliance on Ms Gooch's evidence and her strongly held opinion that health visitors were not under a duty. An initial problem with this reliance is that I have already found that Ms Gooch was not a convincing expert witness on the first issue in the case. The matter goes further. In her report, referring to the period October/November 2012, Ms Gooch had said

> "GPs do not want to see a healthy baby at these ages for no reason."

She said in evidence that it would not be a good use of resources and a waste of resources to advise parents who had chosen not to take the baby to the GP. Yet there was overwhelming evidence that the GP element of the 6 week check was of great

[95] Although Mrs Waters was correct (evidence summarised at [187] above) that the visit on 8th October 2012 was an ideal opportunity to check that the claimant had not slipped through the net, I find that it is not reasonable to impose a duty of care on a nursery nurse in this regard

importance and that those elements could be done well after the age of 6-8 weeks. In this regard:

i) Both Doctor Bint and Doctor Bracey agreed that the check of the heart, hips and testes should be done, even after the 6-8 week window had passed and where there were no apparent health concerns. The reason is that it is important to ensure that there are no congenital abnormalities thus far undetected. Such abnormalities could include cardiac abnormalities, dysplasia of the hips and whether the testes had descended. All these can have serious health implications for a child and are potentially treatable and curable if identified early. This was emphasised and developed in oral evidence as set out earlier in this judgment, particularly by Doctor Bint who was questioned in some detail about the matter.

ii) Mrs Furmage, whilst saying that there was no duty on a health visitor who had noticed that the GP 6 week check had been missed to propose to the parents to make an appointment, nevertheless said that if the health visitor noticed the check had been missed they would advise the parents to ring the GP to see if the window of opportunity had passed. She said that she would do that even if the baby had reached the 16 week visit stage.

405. Given the evidence that the timing of the 6-8 week GP check is not critical and its purpose is to check for serious abnormalities which may not be apparent to somebody not medically trained, I must again find that Ms Gooch's views are not reasonable or responsible. It is not logical to say that sending a healthy baby back to the GP for a check that parents have chosen not to have is not a good use of resources. It may be that Ms Gooch was presuming that in all cases where the 6 week GP check is missed, the parents have chosen not to have it. It may be that she was presuming that the Claimant's parents had chosen not to have it. In either of these presumptions she was in error. Parents do make mistakes. The Claimant's parents made a mistake. Ms Gooch's comment about resources defies logical analysis. So does her comment that GPs do not want to see a healthy baby at these ages for no reason. The whole purpose of the check is to find out whether the baby is truly healthy i.e. does not have conditions which are not apparent to the non-medical expert.

406. The fact that a missed 6 week GP check can, and would, be offered long after the 6-8 week period had expired, and that it would be very desirable for a baby to have that check, albeit late, does not of itself impose a duty of care upon a health visitor. These are necessary but they are not sufficient.

407. A number of points were made by the Defendant, namely:

i) The GP check is one of a number of "offered" services which parents are at liberty to take up or not,

ii) The parents had received several reminders about the GP check,

iii) The parents were perfectly capable of following the system,

iv) By the time Mrs Kirkpatrick saw the Claimant a further 10 weeks had passed between 8th August 2012 and 15th October 2012.

None of these in my judgment assists the Defendant. There was no suggestion by Mrs Kirkpatrick that she drew any inference that the parents had deliberately or voluntarily decided not to take up the GP check. Had she drawn any such inference then she would have been in error. I have found that had the parents been reminded, and particularly had it been explained to them how important the GP check was, they would have made a late appointment for the Claimant.

408. Mrs Kirkpatrick's evidence, as summarised previously in this judgment, requires some analysis. In short she said:

i) She would have noticed that the carbon copies in the red book relating to the GP check were still there. That did not necessarily mean that the patient had not had the check. Her routine would be to ask the parents if the GP check had been done.

ii) If the parents said the check had not been done then, assuming the child was of no concern, Mrs Kirkpatrick would say that they had missed an important development check.

iii) Mrs Kirkpatrick would not have advised the parents to go to the general practitioner because she said that at 16 weeks it would not be logical to send the child then for a 6-8 week GP check.

iv) She agreed that there were aspects of the GP check that could be done at any age, but said it was not her responsibility to get the child checked for those.

v) She knew from working with GPs that they would not have taken a baby for a 6-8 week check once the baby had reached 16 weeks.

409. I have the following comments upon this evidence:

i) The alleged response of the GP to a late referral is wholly inconsistent with that of both GP experts. Further, it would be a serious breach by a GP not to carry out core elements of the 6-8 week check, albeit late, if a child was referred. I therefore do not accept the evidence that GPs would not have taken a baby back for a 6-8 week check once the baby reached 16 weeks.

ii) I do not accept on the balance of probabilities that Mrs Kirkpatrick mentioned to the parents that they had missed the GP check. It is possible that she did so. If she did, she did not make it clear to the parents how important the GP check was. On her own admission, she would not have suggested that the parents contact the GP to have the check done late. Her explanation as to why she would have asked the parents, despite not suggesting that they still take the child to the GP, namely that they could take the red book to the GP the next time they went to so as to have it completed (had they not missed the check) is not persuasive.

410. I find therefore that Mrs Kirkpatrick probably did notice the incomplete carbon copies relating to the GP's check which remained in the red book. I find that on the balance of probabilities she did not mention this to the parents; alternatively, if she did, she did not communicate to them that it was an important check which had been missed, and that they should contact the GP to make a late appointment.

411. Mrs Kirkpatrick's evidence was predicated upon the fallacy that the GP would not do the check at 4 months. Not only was this fallacious, it conflicted with what Mrs Furmage said. She said that, if the check had been missed, they would advise parents to ring the GP to see if the window of opportunity had passed, even at the 16 week visit stage.

412. Mrs Furmage said that if the health visitor became aware the GP visits had been missed, despite the fact that she would propose to the parents to make an appointment, her opinion was that there was no duty on the health visitor team to do so as the duty remained upon the GP. The suggestion that it was the GP's duty was specifically pleaded[96] by the Defendant, on the basis that the fact that the appointments had been missed should have been recorded in the child health electronic system, and the GP should have had systems in place to identify missed appointments and the need for recall. There was no reference to any document which placed upon the GP, or upon the GP solely, the responsibility for reminding parents about the missed 6 week GP check after the date had passed. Doctor Bint said that some GP practices do have a system to pick up a missed check, but there is quite a lot of variation in GP practices. Some GP practices rely on the co-ordinating role of health visitors.

413. It became apparent, at least from Doctor Bint's evidence, that there was no unified way of picking up patients at risk of slipping through the net and missing the GP check. Doctor Bint agreed that there should be a system for picking up such a missed check. Speaking in general terms, based on Doctor Bint's evidence and the lack of precision in the documentation I have seen, it is very concerning that there appears to be no clear system. This is particularly so given that the 4 month check in the SOP is by no means universal.

414. Against that backdrop, and in particular the findings I have made as to Mrs Kirkpatrick's evidence, I find that there was a duty on the health visitor at the 4 month contact (a) to notice, as Mrs Kirkpatrick did, that the carbon copies in the red book relating to the GP entry where still there, (b) to ask the parents whether the baby had been for the GP check (c) if not, to advise and encourage the parents to make an appointment for the GP check to take place, having explained in summary terms the reason why the check was important.

415. The SOP[97] lists a number of specific matters to be considered by the health visitor at the 4 month contact. There is nothing specifically referring to whether the GP check has been carried out. As I said in relation to Mrs Furmage, although tick boxes do have their place, a health visitor is required to exercise professional skill and care. The SOP requires the child's immunisation history to be checked and if required promoted. It is unfortunate that there is nothing which refers to the GP check. Nevertheless the overarching reason for the 4 month contact is to consider "development of the child". Further:

    i) The Defendant was required to co-ordinate the HCP and the named health visitor was 'responsible for and (sic) co-ordinating the delivery of the programme'.[98]

[96] RAD paragraph 29 (10).
[97] Page 22.
[98] SOP pages 4 and 6.

ii) The responsibility for delivering the HCP lay with health professionals, in particular health visitors, on the basis that health visitors have the necessary skills to co-ordinate the HCP. The HCP emphasised integrated services led by a health visitor.[99]

iii) In the above circumstances, taking into account the whole of the evidence, the 4 month contact was a real opportunity for parents who may accidentally have missed the very important GP check to benefit from health visitor co-ordinated services establishing: (a) if they had missed the check accidentally or deliberately, (b) if they had understood the importance of the check, and (c) to be informed that it would be advisable for their baby's health to make the GP appointment at that stage.

416. Therefore, irrespective of the GP's responsibilities in this regard, I find that the health visitor had a duty, in the circumstances which obtained in the Claimant's case, to remind his parents about the GP check and to recommend that he undergo it, albeit late.

417. Mr Todd QC in final submissions said that the Defendant saw the force of the argument that it would have been a simple matter to take some action in October 2012, particularly given the potential harm if a condition such as undescended testes might be present and undiagnosed, and the fact that there was arguably no reason not to take such action. However he went onto remind the Court that the test is not what the Court thinks the reasonable health visitor should have done in an ideal world, but what she would have done in pursuit of her duty of care. His submission ended by referring to the evidence of Ms Gooch as that upon which the Defendant placed most reliance, and the point she made in answer to a question from the court namely:

> "There are no reasons why we don't do a lot of things but that's not the basis of NHS practice – we focus on things that make a difference."

418. I accept that the question is not what should happen in an ideal world, but what should be done in pursuit of a legal duty of care. I do not repeat my comments the evidence of Ms Gooch. I do make the point that referring a child back to the GP via a recommendation to the parents is focusing on something that does potentially make an enormous difference. To take the example of the undescended testes, Doctor Bint said that at any stage up to one year this can be treated and the risk of infertility and or increased risk of testicular cancer averted. Ms Gooch's opinion, based on the erroneous premise that a GP would not see a child late, cannot be relied upon.

419. In summary therefore this breach of duty of care on 15th October 2012 is proven.

Was Mrs Kirkpatrick in breach of duty in not re-measuring head circumference?

420. This allegation was referred to in Ms Gollop QC's final submissions but not developed there. It was the subject of cross examination of Mrs Kirkpatrick and in the particulars of claim[100] there is an allegation that the Defendants failed to measure the Claimant's

[99] See HCP pages 12-13.
[100] Paragraph 9 amended particulars of claim.

head at any time between 8th August 2012 and his admission to hospital on 30th December 2012. Mrs Waters dealt with the point in her evidence[101]

421. I have summarised Mrs Kirkpatrick's evidence earlier in this judgment at [164]-[168]. Mrs Kirkpatrick said that if people were happy with the 6 week check she would not open the growth chart document on the computer when she looked at it prior to the appointment. I have also referred to her evidence briefly in relation to the allegation against Mrs Furmage on 8th August 2012. She did say she would have noted there was no birth head circumference entered on the graph on the computer and/or the red book. She would have noticed that the head circumference at 2 weeks would have been on the 25th centile and at 6 weeks on the 50th centile. She would have had no concern about that because it was normal for a child to move across one centile space. She also agreed that the two plotted measurements were somewhat unusual in that the vast majority of children track along a centile line.

422. The allegation against Mrs Kirkpatrick is free standing, in the sense that it is not dependent upon the subsequent complaint based on visual appreciation of the Claimant's head and body proportions. That allegation will be considered separately below.

423. I do not consider that there was a breach of duty of care by Mrs Kirkpatrick in this regard. Although she said she did notice the entries in the red book, she was seeing the Claimant after a full appreciation by Mrs Furmage on 8th August 2012. It is true that the SOP[102] refers to the rationale/evidence being "to ensure growth along expected centile lines…" The context of this is that a naked weight should be undertaken and under the column "if action required", the whole emphasis is upon weight growth. It is therefore different from the 6 week contact, both in terms of what is required in the SOP and against the backdrop of the literature requiring no more mandated head circumference measurements after 6-8 weeks from birth. In my judgment Mrs Kirkpatrick was entitled to rely upon Mrs Furmage's assessment and what she had/had not done as a result of that assessment. For somebody such as Mrs Kirkpatrick, considering the matter afresh as at 15th October 2012, to embark on a careful analysis of whether Mrs Furmage had acted correctly a few weeks earlier is to look too much with the benefit of hindsight. The breach of duty I have found on the part of Mrs Furmage was not one which was or should have been clearly evident to Mrs Kirkpatrick.

424. I therefore do not find that Mrs Kirkpatrick breached her duty of care to the Claimant based on this allegation.

The visual appreciation allegation

425. This is the allegation which was added by way of reamendment. I have already found as a fact that the Claimant's head circumference was in accordance with the black line for growth as originally agreed by the neurosurgeons. On that basis the Defendant accepts that if there was a breach of duty of care in October/November 2012 in failing to appreciate that the Claimant had an abnormally large head, causation is not in issue between the parties. The remaining question therefore is whether there was a breach of

[101] See [192(i)] above.
[102] Page 22.

duty by either Mrs Kirkpatrick, or the nursery nurses Mrs Makwana and Mrs Hewitt, in failing to realise that the Claimant's head was abnormally large or that there was disproportion between his head and his body.

426. Mrs Makwana and Mrs Hewitt both said they would have noticed a large head such as it would have presented to them[103]. Mrs Makwana said she would definitely have spotted a large head like that. Mrs Hewitt said she thought she would have noticed had the head been as shown on the neurosurgeons' chart. Both nursery nurses felt that if there had been anything obvious about the head they would have noted it. Nevertheless:

    a) Nursery nurses are not trained in measuring head circumference.

    b) They would not have looked at head measurement charts

    c) They were both dealing with the delegated tasks of weight assessment (primarily), though would also have noted any matters that were of concern which came to their attention.

427. Against the backdrop of the reason why the nursery nurses were seeing the Claimant, their training and expertise, and therefore the standard that could be expected of them, I do not find that they were in breach of any duty of care by failing to appreciate the disproportionate size of the Claimant's head.

428. That leaves the position of Mrs Kirkpatrick on 15th October 2012. It is to be recalled that it was her (late served) statement which was the trigger for the questioning in the first part of the trial and the subsequent reamendment. In her statement[104] she said "it would have been inconceivable that I would have not have noted an extremely large head above the 90th centile."

Weight/head circumference correlation – general

429. It was accepted by all, including Professor Mallucci and Mrs Waters that there is very little literature on the correlation between weight head circumference and, indeed, height[105]. Nevertheless Professor Mallucci, Mrs Waters and Doctor Bint said that as a general principle children grow proportionately. There is nothing in the textbook about comparing head circumference and weight growth. Ms Gooch's evidence was that correlation was not something to which health visitors give consideration and is not part of a health visitor's training practice or guidance that they should consider such correlation. Mrs Furmage was not concerned about the difference between the weight centile and the head circumference centile in general terms; nor was Mrs Kirkpatrick. The conclusion I draw from this is that it would be wrong to rely, and as said previously in this judgment I have not relied, upon discrepancy in the correlation for the finding of breach of duty on the part of Mrs Furmage. Her breach of duty was proved on the basis of the head circumference measurements alone. That is why I described the lack of correlation in weight and head circumference as being a "makeweight" point.

---

[103] As at 8th October 2012 Mrs Makwana was considering a head on or over the 98th centile. Mrs Hewitt on 13th November 2012 was considering a head over the 99.6th centile.
[104] Paragraph 19.
[105] See above at [87]-[88] and [222].

430. Nevertheless as at 15th October 2012 the Claimant was on the 99.6th centile for head circumference and was still tracking between the 9th and 25th centile for weight. Whilst Mrs Kirkpatrick had said that it would have been inconceivable she would have not noticed an extremely large head, she did not specifically relate the lack of correlation of the weight as being of any significance. She said it was not uncommon that a baby may have a bigger head than baby weight would suggest and it was not uncommon to see a largish head on a smallish body.

431. Professor Mallucci's opinion was that a mismatch in the proportions of the size of head and body was another indicator of a possible problem. Mrs Waters was of the opinion that health visitors would know that there was a correlation between weight and head circumference and Doctor Bint was of a similar opinion.

432. My conclusion on this is that by October 2012 the lack of correlation between the head circumference and the weight was part of the general picture which would have presented to a health professional and was something to be taken into account. It is to be noted that the Claimant's father was concerned about his son not looking quite right.[106]

Discussion

433. The starting point is that Mrs Kirkpatrick, and indeed both nursery nurses, did not consider it possible that they would not have noted the Claimant with a head on the 99.6th centile. Mrs Kirkpatrick in particular, as a registered nurse and experienced health visitor, must have given her evidence serious consideration in this regard.

434. Of course it may be that these three witnesses are wrong and, as Ms Gooch suggested, it may to some extent be natural instinct for somebody to say that they could not miss a head if it was that big. I bear this point in mind, though I give little weight to Ms Gooch's calculations which she produced for the first time in the witness box and which were not able to be subject to any proper scrutiny. Nor did I find her balloon experiment persuasive[107].

435. In Mrs Waters' June 2020 report she said:

> "… I do think that the reasonable member of the health visitor team looking at XM without clothes on should have been able to detect that something was not right with his overall proportions and to act on that assessment."

436. The Defendant submits that the tenor of the Claimant's evidence (disputed by Ms Gooch) does not approach the kind of certainty and clarity required to establish the basic proposition that no reasonable health visitor could have failed to see what is being suggested. Reliance is placed on Mrs Waters evidence in that she used phrases such as

[106] See [55]-[56] above.

[107] In any event (a) they were based on a head being round, rather than elongated and (b) Professor Hayward's supplemental evidence was premised on why the disproportion which there would have been had the claimant been on the 99.6th centile was not observed by the professionals. He suggested that if the head had been on the 91st centile it would have appeared materially smaller: see above at [65].

"something was not right", "tried to build a picture", a "sense of visual appearance" and "one may not know from looking what is wrong, whether it is length or weight or head size, but one has a visual appreciation that something is not right." Similarly Doctor Bint said "something visually not right"

437. I accept the evidence of the Claimant's witnesses, in preference to that of Ms Gooch. Albeit that that evidence was put in guarded terms, the central point is that an experienced health visitor should instinctively have realised that there was a substantial disproportion in the size of the Claimant's head in the context of his body size. Essentially Mrs Kirkpatrick and the nursery nurses agreed with this. This disproportion is distinguishable from the previous issue about correlation between weight and height as at 8th August 2012. The health visitor was not required to diagnose hydrocephalus but to spot a potential problem and to seek medical opinion. By failing to do so Mrs Kirkpatrick fell below a standard of reasonable care.

438. Of course there was the possibility that the Claimant had a familial large head[108]. This was not an explanation on which Mrs Kirkpatrick herself relied. She did not accept what I have found to be the effect of the neurosurgeons' evidence. Had she remeasured, she would have found that the Claimant had gone through more than two centiles. That would have been a red flag warranting referral to a medical practitioner. Further, although I accept Mrs Kirkpatrick's evidence that the Claimant was able to lift his head from prone, I find that this was not a sufficient basis for any assumption that his head was not disproportionately large. I have already found as a fact that the Claimant's head was on the 99.6th centile. There was no medical evidence that if the Claimant could lift his head from prone he could not have been on that centile[109]. That is a reason why on balance I accept Mrs Kirkpatrick's evidence that he could lift his head, rather than that he tried and failed. Nor does the 21st October 2012 photograph militate against the head being on the 99.6th centile. On the contrary it is, as the neurosurgeons agreed, compatible with it. I therefore find that Mrs Kirkpatrick was in error on the 3 points she made which are summarised at [171] above.

439. The 21st October 2012 photograph was compatible with a head on the 99.6th centile.

440. On 11th December 2012 and 19th December 2012 the Claimant went to the GP with eczema on the first occasion and a cough on the second occasion. His head circumference and weight were not measured. There is no suggestion that the GP saw the Claimant naked or naked apart from a nappy. In those circumstances it is understandable that the visual appreciation of the disproportion in the Claimant's body and head would not have been registered. On the contrary Mrs Kirkpatrick was carrying out an examination of the Claimant, she weighed him and she therefore saw him in a naked or near naked state. It was common ground amongst many witnesses that it is difficult to assess growth in a clothed baby. For example Professor Mallucci said precisely that and added that he did not know whether the GPs in December 2012 saw the Claimant clothed. The circumstances also were that the GPs were not being asked to assess growth, whether of the Claimant's weight or head. It is therefore unsurprising that they did not opportunistically detect a head growth abnormality when the appointments were for specific health problems which were not growth related.

[108] Though see the evidence of Professor Mallucci on this at [82] above, which I accept.
[109] Cf also footnote 25 above.

441. For the above reasons I find that Mrs Kirkpatrick was in breach of duty on 15th October 2012 in failing to notice that the Claimant had a disproportionality large head and, in consequence, failing to measure his head circumference and/or refer him for medical opinion.

Summary

442. My findings in favour of the Claimant therefore are:

i) Mrs Furmage was in breach of duty of care when she failed on 8th August 2012 to arrange for the Claimant's head circumference to be remeasured and/or failed to refer him for medical opinion.

ii) Mrs Kirkpatrick was in breach of duty of care in not recommending to the Claimant's parents that he undergo the 6-8 week GP check, albeit late.

iii) Mrs Kirkpatrick was in breach of duty of care by not appreciating that there was disproportion in the Claimant's head size which should have led her to have his head remeasured and/or checked by a medical practitioner.

443. I understand that it is common ground based on these findings that there is no issue as to causation.

444. I end this judgment by saying this:

i) I would like to thank counsel for their assistance in this difficult matter.

ii) I would wish to restate what has been referred to in the judgment and by witnesses and counsel, namely that the Claimant's parents are exemplary.

iii) Although I have found breach of duty of care on the part of Mrs Furmage and Mrs Kirkpatrick, this is against a background that I am sure that they are highly professional, very experienced and dedicated health visitors. The fact that they made mistakes and fell below the reasonable standard of care on occasion does not in any way detract from that.