This judgment was delivered in private. The judge has given leave for this version of the judgment to be published on condition that (irrespective of what is contained in the judgment) in any published version of the judgment the anonymity of the child and members of the family must be strictly preserved. All persons, including representatives of the media, must ensure that this condition is strictly complied with. Failure to do so will be a contempt of court.

IN THE FAMILY COURT

Case number: BS21C5007

Re AB (a child: diabetic care)
Neutral citation: [2023] EWFC 149

IN THE MATTER OF THE CHILDREN ACT 1989 AND
IN THE MATTER OF CHILD AB

Date hearing commenced: 4th July 2022

Before HHJ Wildblood QC

BETWEEN:

Local Authority

Applicant

-and-

Mother

First Respondent

-and-

Father

Second Respondent

-and-

Child AB
Through his guardian

Third Respondent

Judgment, as approved by Judge.

Cyrus Larizadeh QC and Lucy Logan Green for the Local Authority.
Nick Goodwin QC and Cecilia Barrett for the mother, instructed by Miles and Partners.
Libby Harris for the father, instructed by Lyons Davidson

Matthew Brookes-Baker and Fiona Farquhar for the child, instructed by Battrick Clark.

HHJ Wildblood QC:

1. **Introduction -** This judgment arises from a complex fact-finding and threshold hearing in public law proceedings that were issued on 24th September 2021. It is necessary for me to give detailed consideration to a large amount of factual, medical and expert evidence. I have benefitted from an exceptional level of legal representation that has been given by all solicitors and counsel. The less said about the time estimate and the combined failure to apply paragraph 10.1(a)(iii) of Practice Direction 27A of The Family Procedure Rules 2010 sensibly, the better.

2. The proceedings relate to Child AB; he was diagnosed as having type 1 diabetes on 5th November 2020 [SB-C38].

3. The Local Authority alleges that the mother mismanaged ABs diabetic care from the beginning of March 2021 to 3rd September 2021 and, on two identifiable occasions (24th and 28th July 2021), engaged in the covert and wrongful administration of insulin to him. The Local Authority contends that, by reason of the matters upon which it relies in its much amended schedule, the mother caused AB harm, exposed him to the likelihood of future harm and caused his education, social development and emotional development to be disrupted.

4. As recorded in a child arrangements order dated 12th October 2021, AB has lived with his father since 7th September 2021. He has contact with his mother twice a week under supervision; he has direct contact with his maternal grandparents once a week on Sundays. Prior to 7th September 2021, AB had always lived with his mother. From early March 2021 until he moved to live with his father, AB spent a large amount of time as an inpatient in the hospital in relation to his diabetes. Since being with his father, he has not required inpatient treatment.

5. The mother was living with her parents and her elder brother. In February 2022, she and her brother moved together to separate but local accommodation. Her maternal half-brother lives nearby. The mother denies all of the allegations against her and, it is argued on her behalf, should be entirely exonerated in relation to them.

6. The father lives with his partner and his parents. He has taken a neutral position at this hearing but says that AB's diabetes has been stable in his care, unlike when AB lived with the mother. Like the mother, he expressed concern about the diabetic care of AB at his school. In February 2022 the Local Authority produced a positive parenting assessment of the father and his partner which concludes, amongst other things, that '*there are no concerns around their care of AB, their management of his medical needs and ability to meet his needs, nor are there any concerns about their ability to act protectively, to work with professionals and to promote AB's safety and well-being.*' By way of update prior to this hearing the social worker wrote, amongst other things [SB-C2]: '*Generally, AB now presents as a settled, stable, happy and sociable boy and the Local Authority has no concerns whatsoever for AB and the care that AB is receiving since he has been in his Father's care.*'

7. AB appears by his guardian; she contends that the mother mismanaged AB's diabetic care on dates since 13th June 2021, does not support the Local Authority's contentions in relation to the 24th July 2021 and leaves it for the court to decide whether there was covert administration of insulin by the mother on 28th July 2021. She supports the Local Authority in its contention that AB's education has suffered consequent disruption and that the threshold criteria are fulfilled, both on the basis of harm and likelihood of harm at the relevant date. The relevant date, for the purposes of section 31 of the Children Act 1989 is 7th September 2021, when the Local Authority intervened outside proceedings to influence the move of AB to his father or, at least, by 24th September 2021 when these proceedings were started.

8. Expert evidence of exceptional quality has been given by Professor Hindmarsh, a Professor of Paediatric Endocrinology; he gave evidence over the course of two days and supplied a report and also answers to written questions [E49 and E227]. Since it is my intention that a copy of this judgment should be sent to Professor Hindmarsh, I would wish to record immediately my gratitude to him for the quality and clarity of his evidence. One of my enduring memories of this case will be the experience of watching the cross examination by Mr Goodwin QC of Professor Hindmarsh; it was one of the best that I have ever seen in my 43 years as a lawyer and the Professor's responses to questions showed why he is a world leader in his field.

9. Dr Laura Pipon-Young, a psychologist, wrote a report about the mother [E192] and, on 11th July 2022 also answered some written questions that were put to her [not in the bundle]. She did not give oral evidence, but her written evidence is important and I will consider it in detail later.

10. The clinical lead for paediatric diabetes at the Hospital for Children at the relevant time was Dr B, who has since retired as a Consultant Paediatric Diabetologist there; his statement, exhibiting his report, is at SB-C34. The same report appears at E1 of the main bundle together with his chronology at E11. Dr B was only directly concerned in the care of AB in the weeks commencing 29th March and 2nd August 2021; however, he said in evidence, that he spent days reviewing AB's case in order to prepare his report.

11. The consultant in charge of AB's care was Dr G, a Consultant Paediatric Endocrinologist at the hospital, whose statement is at SB-C47. Paediatric Diabetes Speciality Nurses were also assigned to AB's care. A number of other Speciality Nurses were also involved in his care, as were many other doctors and nurses. I will refer to their evidence within the chronological account that I give of the evidence.

12. The papers in this case are voluminous. My version of the medical bundles had to be split because my work computers could not cope with their size. They are:

    i) The main bundle – that is the bundle of the main court documents.

    ii) The supplemental bundle of court documents. I refer to documents in that bundle with the prefix 'SB'.

    iii) The first bundle of medical records. It contains documents numbered I1 to I48, J1 to J1049 and K1-28. Those documents contain some information from the devices used to record A's blood glucose levels. Very little reference has been

made to this bundle since its contents have largely been replaced by a much more composite bundle of material from those devices (the Diasend, etc bundle).

iv) The first half of the second bundle of medical records – I1 to I2461.

v) The second half of the second bundle of medical records – I2462 to I4816.

vi) The 'Diasend, Libre, Medtronic Bundle' which I will describe in more detail, later.

vii) The 'Evidence Matters' bundle. That is a bundle that has been created from over 100,000 pages of material containing messages that passed between the mother and people with whom she was acquainted through the use of mobile phones. The bundle runs to 3,181 pages. It is to the credit of all of the legal representatives that, having been presented with that enormous amount of material very shortly before this hearing began, they marshalled and presented it. I was told that no party sought an adjournment in order to have more time to consider it.

13. **Schedule of allegations –** The Local Authority schedule of allegations has undergone a number of changes; it was amended twice during this hearing. Therefore, the schedule of allegations in the bundle at A54 is now outmoded. I have typed the current schedule and page references cited by the Local Authority in black typescript. I have typed the father's replies in blue typescript and the mother's in brown. The composite document looks like this:

1) AB was diagnosed with Type 1 diabetes. As a general proposition, since that date, and in particular since 10th March 2021, AB's mother has on occasions: a) intentionally administered to him unnecessary doses of insulin and / or b) intentionally or through lack of reasonable care, seriously mismanaged his treatment and diabetic care. As a result, AB has suffered or was likely to suffer significant harm. The Local Authority schedule cites the report and chronology by Dr B[E:1-13], the reports of Prof Hindmarsh [E:49-191 and E:224-232], the evidence of the social worker [C14 and C57] and the school evidence [F2 and F6]. The father states that this is for the mother to respond to. However, the father accepts that mismanagement of insulin could result in significant harm. The mother replies by saying: a) The mother denies intentionally administering doses of insulin. b) The mother denies that she has intentionally or through a lack of reasonable care seriously mismanaged AB's treatment and diabetic care. If the mother has seriously mismanaged AB's treatment and diabetic care, she was not aware of doing so. The mother has engaged in a cognitive and dyscalculia assessment and it is reported that she has a borderline learning disability and dyscalculia [E194]. The mother has never wanted AB to suffer any harm.

2) AB's admission from 10 March 2021 was due to a hypoglycaemic episode that occurred because of the mother's failure to manage AB's diabetic care and treatment, deliberately or without reasonable care. The Local Authority schedule cites the report and chronology by Dr B [E:1-13]. The father states that this is for the mother to respond to. The mother replies by saying: The mother denies that she has deliberately or without reasonable care induced a hypoglycaemic episode in AB whilst in her care

necessitating a hospital admission on 10 March 2021. AB was diagnosed with a UTI on 3 March 2021 and he was prescribed anti-biotics [C169§51] [I1587]. He was seen again at the hospital on 7 March 2021 and prescribed a different anti-biotic. Prof Hindmarsh reported [E66] that the admission to hospital in March 2021 followed dose adjustments for high blood glucose associated with a urine infection. [C169§52].

3) [Deleted]

4) On occasions during the week commencing 26th June 2021, whilst on holiday in St Ives, AB's mother allowed him to remain disconnected from his insulin pump for periods longer than those recommended by his diabetes medical team "as he was having such a good time going in and out of the sea". AB had to be admitted to hospital immediately on return home (late on 3rd July) and, as a consequence of his mother's failure to monitor and meet his need for insulin, was hyperglycaemic. The Local Authority schedule cites the statement by the mother [C:180-181] and pages I3307 and I4343. The father states that this is for the mother to respond to. The mother replies by saying: The mother has confirmed in her statement that there were occasions on holiday where AB's Medtronic insulin pump was disconnected for periods of time that lasted slightly longer than recommended [C184-185]. Data from the Freestyle Libre and Accu-Check finger prick meter was communicated to the diabetes team at the Children's Hospital throughout the holiday and mother sought regular guidance [I4345-14347] for his high blood glucose levels. AB has been on a Medtronic pump on two separate occasions [C167] both in and outside of hospital and was taken off it due to repeated hyperglycaemia [C175-C176/C184-C185]. The mother does not believe his hyperglycaemia was caused by the short moments when he was disconnected from the pump.

5) Between 10th and 21st July 2021 AB suffered numerous episodes of hypoglycaemia at home, the timing of which was "consistent not only with mismatch between short-acting insulin and carbohydrate content of food but also with the action of long-acting insulin." This was as a result of the mother's failure to manage AB's treatment plans either intentionally or due to a lack of reasonable care. The Local Authority schedule cites the report of Professor Hindmarsh at E67 and pages I4339-I4342, I3304 and I3314. The father states that this is for the mother to respond to as he was not caring for nor did he have contact with AB during this period. The mother replies by saying: During the period 10th to 21st July 2021 AB was on a treatment plan that included short acting insulin and long acting insulin [C187/I3287]. It is unclear whether it is being alleged the mother administered long acting insulin inappropriately. The mother denies that she has intentionally or due to a lack of reasonable care failed to manage AB's treatment plan.

6) On the dates set out below, the mother failed to call an ambulance when she was reporting AB to be unconscious, not breathing, blue and/or unresponsive in direct contravention of the hypoglycaemia flow chart dated 1st November 2020 and the specific advice of AB's paediatric diabetes specialist nurses: a) 13th June 2021, b) 19th June 2021, c) 15th July 2021. The Local Authority re-amended schedule cites E217, E378, I1934-1936, I2009-2011, E2167-2168 and I4353. The father states that this is for the mother to respond to. The mother accepts that AB did suffer from hypoglycaemic episodes on 13 June 2021, 19 June 2021 and 15 July 2021. The mother treated the hypos in accordance with training and advice she was given. She

did not consider that AB required an ambulance on those occasions. The mother replies by saying: The mother accepts that some of the text messages she sent to friends and/ or family around this time (which are not particularised here) could be interpreted as blunt. The mother accepts that she should have used different words such as 'drowsy' to describe AB's presentation. The mother was not 'reporting' in the formal sense of the word, that AB was unconscious, not breathing, blue and/or unresponsive, she sent text messages to friends and/or family. Following the episode on 13 June 2021, the mother made contact with the PDSN team on 14 June 2021 and received a call back on 15 June 2021 [I4352-I4353]. Following the episode on 19 June 2021, the mother took AB to A&E at 21.48 because she was worried about his hypoglycaemic episodes [I2853]. Following the episode on 15 July 2021 the mother took advice from Nurse D (a nurse) on 16 July 2021 [I4342] and had taken advice on 14 July 2021 from Nurse S (diabetic specialist nurse) [I4342].

Added as allegation 6(ii) has been : On 21 July 2021 the mother could not rouse AB for over an hour and yet delayed calling 999 unreasonably and against medical advice placing AB at risk of serious harm. The mother replies by saying: The mother accepts that AB had a hypoglycaemic episode which began at about 20.00 on 21 July 2021 [J1039]. The mother attempted to treat AB's hypoglycaemic episode in accordance with her training. AB was drowsy and not accepting glucose treatment [C190 para 151]. The mother called an ambulance because she had been advised to do so if AB was unresponsive during a hypoglycaemic episode. The mother does not accept that she delayed calling 999 unreasonably and against medical advice. The hypoglycaemic episode began at around 20.00, she attempted to treat it. The mother then called an ambulance three times in total, at 21.20, 22.01 and 23.15 [E46]. The paramedics arrived at 00.38 [SBE35]. The mother does not accept that her decisions placed AB at risk of serious harm.

7) Following admission to hospital on 23rd July 2021 overnight to 24th July and on 28th July 2021, AB experienced hypoglycaemic episodes. These were caused by exogenous insulin. The Local Authority schedule cites the report of Professor Hindmarsh at E56, E60-61 and E23. It also cites I3318-I3414. The father states that he was not present in hospital during this period. The mother replies by saying: The mother agrees that AB suffered hypoglycaemic episodes on 24th and 28th July 2021. The mother accepts the written and oral evidence of Professor Hindmarsh on this issue. Professor Hindmarsh calculated that the insulin identified in the hypo screen test results of 24 July could have been insulin from a "flush" after the insulin infusion pump was switched off. Professor Hindmarsh initially said the results for the hypo screen test of 28 July could equally be explained by the faulty cannula as from administration by an unknown person.

8) The exogenous insulin referred to at 7 above was administered by AB's mother, who was present at all relevant times and who was aware that she was administering unnecessary and excessive insulin that would result in hypoglycaemic episodes. The father states that this is for the mother to respond to. The mother replies by saying: The mother did not administer exogenous insulin on 23rd July overnight to 24th July or on 28 July 2021. AB's insulin was administered through a Sliding Scale infusion pump managed by the treating team at the Hospital [C192-C200]. The mother did not know how to use that pump. She did not have any insulin pens or syringes on her person during that period as per hospital protocol [C201].

9) AB was readmitted to hospital on 3 September 2021 following episodes of hypoglycaemia whilst in the mother's care. The Local Authority schedule cites pages C10, E1-13, E62 and F6. The father states that this is for the mother to respond to. The mother replies by saying: The mother agrees that AB was readmitted to hospital on 3 September 2021 but that admission was primarily because of the child protection measures in place at that time and heightened concern for AB. AB had high blood glucose readings on arrival at hospital [C208/I4079]. Professor Hindmarsh describes the hypoglycaemic episode on 3 September 2021 as follows: "*It is possible that the hypoglycaemia resulted from undertaking a new exercise earlier in the day and possible mismatch between insulin doses and food intake*." [E232].

10) Through the administration of excessive insulin causing hypoglycaemia, AB was at risk of significant physical harm (including fits and/or other neurological consequences) or death. The Local Authority schedule cites page E61. The father states that he accepts '*there is a risk of significant harm if excessive insulin is administered*.' The mother replies by saying: The mother accepts a child is at risk of significant physical harm if administered excessive insulin. She has not administered excessive insulin to her knowledge and has at no time wanted to harm AB [C225].

11) AB has suffered harm through missed education; in the 2020/2021 school year, AB's attendance was 38.8%. AB's attainment is considered well below age related expectations as a result of the amount of missed education he has suffered due to the frequency of hospitalisations. The Local Authority schedule cites the evidence of the social worker C14 and the school evidence at C44, C47 and C77-78. The father states that, since AB has been living with him, he has attended school on all occasions, save for authorised absences due to Covid and one hospital appointment. The mother replies by saying: The mother did not want AB to miss school. She tried to get AB back into school but the school were concerned about managing his diabetes [C178/C227]. AB accessed schooling whilst in hospital. The mother does not seek to minimise the harm arising out of AB missing out on mainstream school, but only that she did her best to ensure his education was promoted during his hospital stays [C175].

12) AB has suffered emotional harm by thinking of himself as an ill child. The Local Authority schedule cites pages C56 and C73. The father states that AB '*understands that he has diabetes which is an illness. However, the father does not perceive that AB has suffered emotional harm as a result of his awareness*'. The mother replies by saying: The mother agrees that it would be emotionally harmful for a child to have illness fabricated or induced in him/her. The mother has not sought to encourage AB to think of himself as an ill child. The mother does not consider AB to have suffered levels of emotional harm disproportionate to the reality of his diagnosis. He has a life changing diagnosis of Type 1 diabetes which is not something the mother has brought about. Dr B describes a diagnosis of Type 1 diabetes in a child as "*life changing, life long, potentially life threatening condition*" [I3778].

13) AB has suffered significant harm emotionally and to his social development through unnecessary and prolonged stays in hospital and due to the mother's handling of his diabetes. The Local Authority schedule cites the evidence of the social worker at C14, the school evidence at C55-82 and pages I1746 and I4249. The father states that he

'accepts that AB may have suffered harm to his emotional and social development as a result of these stays. AB was not in the care of his father during these periods.' The mother replies to this by saying: The mother did not cause the prolonged hospital admissions. The length of time AB stayed in hospital was determined by the treating consultants. The mother did not gain any benefit from the prolonged stays in hospital and frequently said she wanted to go home [C170/C172/C175]. The mother recognised that AB's quality of life was significantly impaired as a result of the hospital admissions C168/C175/I4351] and as a result he suffered emotional harm and to his social development. She did not deliberately cause this.

14. **The guardian's position** – In her counsels' helpful closing speech they set out the guardian's position in this way:

The Children's Guardian has carefully considered the totality of the evidence and considers it appropriate to advance positive submissions, inviting the court to make the following findings:

(a) M culpably neglected AB's diabetic treatment and care by mismanaging it on the following occasions:

i. The 13th, 15th, 19th June 2021 and the 15th, 21st July 2021.

ii. Whilst on holiday in St Ives from 26th June to 3rd July 2021.

iii. During the period between the 12th July to the 21st July 2021.

iv. On the 28th July 2021.

(b) M exposed AB to the risk of significant harm on the 13th June 2021 by allowing him to go with someone she knew was not suitably trained to safely manage his diabetes and then by deliberately concealing this when informing the father of AB's loss of consciousness.

(c) M exposed AB to the risk of significant harm on the 13th , 15th,19th June 2021 and the 15th and 21st July 2021 by failing or delaying to call an ambulance and /or informing his diabetic clinical team of his loss of consciousness in a timely fashion or at all.

(d) During the period between the 14th July to the 19th July 2021 the M concealed from the Maternal Grandmother that she was giving AB Magnum ice-creams, crisps and chocolate bars in an attempt to bring his levels up.

(e) There is evidence capable of supporting the LA's contention that AB received unauthorised additional exogenous insulin administration on the 28th July 2021 and that this was most likely administered by the M.

(f) No action or behaviour by AB caused or significantly contributed to M's mismanagement of his diabetes or significant hypoglycaemic or hypoglycaemic episodes.

The emphasis in court has principally been on the period between the 10th March 2021 to the end of July 2021, although it is understood that the LA continue to seek findings in respect of the 3rd September 2021. Dr B confirmed that "AB's early diabetes care was satisfactory, confirmed at his initial appointment in the

diabetes clinic on 4th February 2021" [E3]. This appears to be at odds with M's suggestion that her early diabetes education was inadequate, or she lacked understating, an issue which will be revisited below.

15. **Appendices to this judgment** - During the course of this hearing I prepared three draft documents for release to counsel. Following their release, Counsel were good enough to consider them. They submitted corrections and amendments which I have incorporated. I am grateful to them for doing so. I have decided to place those documents as appendices to this judgment. They are an integral and essential part of it and I will not repeat their contents in the main body of the judgment. They are:

    i) The directions of law (p1-4).

    ii) A glossary (p5-7).

    iii) A schedule based on the bundle that is called 'Diasend, Libre, Medtronic Bundle' (p8-13). I will try to remember to refer to pages in this bundle with the prefix DM but, since during note-taking, I did not use that prefix, I may forget. The bundle documents all bear an 'I' or 'J' prefix.

    iv) My summary of the closing written submissions of the Local Authority, the mother and the guardian. I have not summarised the father's short written submissions given his neutrality (although, of course, I have read them and am grateful to Ms Harris for supplying them). They are at: p14 [Local Authority], p16 [mother] and p19 [guardian]).

    v) The two Excel graphs prepared by counsel, Ms Farquhar and Ms Barrett, showing the maximum and minimum readings for AB's blood glucose levels whilst he was at school. I am grateful to counsel for these. They were prepared at my request. They show that there have been high and low readings when AB has been at school. They also show that, in the father's care, there have been some high and low readings, although I accept that the overall pattern whilst AB has been with the father has been much more stable than when he was last with the mother. Those appendices, which I have studied, will have to be annexed separately to this judgment since, necessarily, they are in Excel, not Word, format.

16. I need to say more about the third and fourth of those documents.

17. The Diasend, etc, bundle came into being during the currency of this hearing. Again, nobody sought an adjournment to absorb it. I have spent a lot of time considering it during this hearing, and frequent reference was made to it. I would suggest, respectfully, that anyone reading this judgment might wish to look at that bundle at this stage. The information that it records comes from devices and systems that are explained in the glossary. The schedule that I have prepared sets out the dates upon which AB was in hospital and colour codes the table in the appendix to say when that was. It also records how insulin was being delivered to AB at the relevant times and colour codes that information on the table. Although the information in the 'DM' bundle is important and gives some immediate insight into AB's daily blood glucose

levels, like every other class of evidence in this case, it has to be approached with caution not least because:

i) The information that it gives has to be intertwined with the other evidence in the case. The readings from these machines cannot be viewed on their own. An example is that at the start of March 2021, AB had a UTI (I return to the effect of illness on blood glucose levels later).

ii) There is a real danger in looking at this bundle's information relating to individual days and drawing conclusions from it, without looking at the overall pattern of information that arises from putting an individual day in the context of others.

iii) In looking at the Libreview readings it has to be borne in mind that it will measure blood glucose levels from 1.1 to 27.8 mmol/l. In this case, AB is recorded as having blood glucose levels of 27.8 on many occasions on the charts in the relevant 'DM' bundle. How much beyond 27.8 the actual level was cannot be stated from that material.

18. As to the fourth document, I need to explain that I read each of the submissions from counsel at least twice. I skim-read them first and then read them thoroughly. I spent at least four hours on Thursday 21st July 2022 reading and considering the mother's submissions. I spent at least two hours on that day doing the same in relation to the submissions of the guardian. I spent about four hours on Saturday 23rd July considering the written submissions of the Local Authority. On Friday 22nd July 2022 I spent a day in court hearing the oral submissions of the parties, supported by their helpful, written documents. Therefore, if the summaries that are attached omit reference to a point that counsel have argued, the fault is with the summary and does not signal that I am unaware of the issues that are raised by them. Having spent so much time reading them and listening to closing speeches, I know them well. It is impossible to cover in a judgment every argument or aspect of the evidence in a case of this magnitude.

19. **Preparing this judgment and my overall opinion**– Of course, it has taken days (60 hours over five days) to write this judgment – and so it should. It is necessary to consider a large amount of very detailed evidence and skilful submissions in a highly controversial case. Before writing it, I have made sure that I have thought through what I am going to say and what my conclusions will be. This judgment does not represent a display of me working out what I think. I knew what I was going to write before putting finger to keyboard.

20. Therefore, so that anyone reading this judgment can see where, overall, I am going, I will give a very tightly worded summary of my overall opinion based on the evidence that I have heard and read.

21. The mother is a loving mother who is strongly attached to AB, her only child. She is also a vulnerable woman who has faced a number of significant challenges in her own life. I set out those challenges within this judgment.

22. The diagnosis of diabetes was a very significant event in AB's life but also had major implications for this mother. There had been times, before that diagnosis, that she struggled with his behaviour; there are school reports to which I will refer that show that. Initially, after AB's diagnosis, she coped reasonably well with his diabetic care up to about the end of February 2021. After AB had undergone three long periods as an inpatient, during which she remained with him, she stopped coping adequately with his diabetic care in about mid-June 2021.

23. One challenge for the mother is the dyscalculia from which she suffers; the grandmother speaks truthfully about the embarrassment that the mother feels about it [SB-C90]. Much has been said about it at this hearing. The mother's dyscalculia did not prevent her from absorbing, at the time it was given, most of the well-delivered training about diabetic care that she received from the skilled and specialist nurses at the hospital and applying most of it, usually. She dealt adequately with regular dosing and the use of the equipment with which she was provided. None of the nurses identified any major mistakes that she made. However, I accept that more intricate calculations in relation to the management of AB's diabetic care would have been very difficult for her, especially at times of heightened stress – for example, some 'carb counting', calculating doses to avoid 'stacking' (i.e. giving too many doses on top of each other), preparation for and the consequences of physical exercise with correct dosing, how to respond to intercurrent illness with correct dosing, heatwaves, changes in insulin regime and the other matters considered by Professor Hindmarsh at E68. From AB's point of view: i) those are the sort of things that a parent caring for a diabetic child must be able to deal with, since they are recurrent; ii) the effect on the child of not dealing with them can be extremely serious.

24. In March 2021, particular difficulties began with regulating AB's blood glucose levels; initially that was caused by a UTI but, on 10th March 2021, he had 19 hypos [DM-J901]. Between 10th March and 19th May 2021 AB spent 54 days in hospital and only 17 out of hospital. The mother, who was sleeping on a bed in the hospital for most nights during the periods of hospitalisation, was exhausted.

25. In March 2021 and later, the mother sent exaggerated messages to friends, men she had met on the internet, acquaintances and relatives in relation to AB's condition. Those messages have to be considered both cumulatively and individually in context. Having done so and having reflected hard about them, my opinion is that many of them simply show the mother seeking sympathy and using exaggerated terms about AB's circumstances to that end. For her to have done that in texts with men that she has met online, speaks of an emotional loneliness which, I think, is sad and resonates with what I have said in paragraph 21.

26. However, in my judgment, the Local Authority has placed a disproportionate emphasis upon many of them; its closing address is full of references to them and I have looked at each one. The exaggeration in those messages has to be placed in the context of a mother who did not exaggerate to professionals, especially medics, who did not want AB to be in hospital, who was distressed by the medical treatment that AB had to undergo and who is very closely and lovingly attached to him. There is no suggestion that she manipulated medics. She was not attention seeking with medics, nurses or the school. There is no evidence that the exaggerated messages translated themselves into action or attempted medical treatment of AB. She is a long way from the sort of 'FII by

proxy' parent that is seen in more egregious cases and which, initially, she was portrayed to be. The original suggestions of chronic and covert insulin maladministration have not been substantiated and cannot be so.

27. For reasons that I will explain, by mid-June 2021 the mother was not managing AB's diabetic care adequately. In very simple language, she was not coping. At times AB was dangerously and repeatedly hypoglycaemic (a quick glance at DM-I30-31 tells that story). At other times, such as the week's holiday in St Ives from 26th June 2021, he was seriously and repeatedly hyperglycaemic (DM- J1000-1 tell that tale). There were at least two very serious incidents when AB's blood glucose levels dropped so low that he either became unconscious or, at the very least, was seriously hypoglycaemic. From the perspective of AB, these were serious events. If, as the mother suggests, his blood glucose levels went down to 1.3 on 13th June, it would only have taken a further reduction of 0.4 for his blood glucose levels to be such that there was a significant risk that he would be comatose. On 13th June 2021, the mother did not seek medical assistance when she should have done and, on 21st July 2021, did not act with sufficient speed when faced with a medical emergency.

28. In June, July and August 2021, AB was in hospital on 15th and 16th June 2021, from 19th to 24th June 2021, 3rd to 10th July 2021 and from 22nd July 2021 to 24th August 2021. His return to hospital on 21st July 2021 occurred the day after he became unconscious due to hypoglycaemia. The two important dates of 24th and 28th July 2021 fall within that last mentioned period of admission. For reasons that I will explain in extensive detail later, I do not consider that the Local Authority has proved its case to the civil standard of proof in relation to the 24th July 2021. I do not think that the evidence of a nurse, Nurse D, concerning that day is reliable on the essential issue of timing. I agree with the guardian about that day.

29. In relation to the 28th July 2021, I consider that the Local Authority has proved its case that the mother administered insulin to AB covertly. That conclusion requires extensive and complex analysis, which I will set out later. It also requires a hard judgment call about which I have thought very heavily. Given the mother's denials, it would be speculative for me to suggest why she behaved in that way on 28th July 2021 and I do not enter into that speculation. However, as I stated in the hearing, one very simple reason ***might*** be that she did so because, knowing that AB had been hyperglycaemic since he awoke that day [DM-I1010] and that the infusion pump had been turned off at 20:38 hrs, she took it upon herself to give him some insulin thinking, wrongly and dangerously, that it was what he needed. The effect was that his blood glucose levels reduced to 1.4 at one stage and the insulin levels from the blood screen that was taken were high (160 mU/l – that is more than 16 times the level of 9.7 mU/l suggested for the 24th July following the more limited blood screening ('assay').

30. From 29th July 2021 to 24th August 2021, the hospital put in place enhanced supervision by which the mother was not left on her own with AB. During that period his blood glucose levels were much more stable than they were before it. For instance, on the six days from 13th to 18th July when he was in the mother's care at home [DM-J1006] AB is recorded on the LibreView charts as having had 53 hypos. During the period of supervision, he had a total of 22 hypos in 26 days.

31. When AB came out of hospital on 24th August 2021, an agreement was in place that the mother would not provide any of his diabetic or insulin care. The original suggestion that the mother administered insulin covertly and maliciously on 3rd September 2021 bore no substance. I find that the grandmother stuck to the rules of the agreement, as I will explain.

32. AB was in hospital again from 3rd to 7th September 2021. He was then discharged into his father's care. Since then, his diabetes and blood glucose levels have been much more stable and he has not been hospitalised. The father and his partner have looked after him well.

33. By way of macro-analysis, I want to mention now that there are these three points of relevance which are not conclusive in any way (either individually or cumulatively): i) AB spent 97 out of 170 days in hospital when with the mother. Neither Professor Hindmarsh nor Dr B [E3 and oral evidence] had ever come across a child of AB's age experiencing that type of hospitalisation before; ii) during the period of enhanced supervision, AB's diabetes stabilised; iii) during the extensive period that he has now been with the father, he has not required any hospitalisation and his diabetes has been as stable as might be expected of a child of his age.

34. I record my specific conclusion in response to the Local Authority's schedule at the end of this judgment.

35. **Different periods under consideration** – This case divides down into separate distinct periods:

    i) Matters relating to the mother and also to AB prior to the diagnosis of diabetes.

    ii) The period from November 2020 to the end of February 2021. During that period the mother received training in relation to diabetes and its management and care for AB at home, save for two brief admissions into hospital for unrelated matters.

    iii) The period from the start of March 2021 until mid-June 2021. From 10th March 2021 to 13th June , AB spent about 54 days in hospital (see p9 of the appendices). He spent about 41 days out of hospital.

    iv) The period of 13th June to 22nd July 2021 when, as I have found, the mother was not coping with his diabetic care.

    v) 22nd to 29th July 2021 when AB was in hospital. It is during this period that the events of 24th and 28th July occurred. The decision to put in place enhanced supervision was made on 29th July 2021.

    vi) 29th July to 24th August 2021 – this is the period in which AB remained, usually with the mother, in hospital but AB was under enhanced supervision.

    vii) 24th August to 3rd September 2021 – AB was at home with the mother, her parents and J. There was an agreement in place that AB's insulin would be kept

in locked boxes and the mother would not be able to access the keys. It was administered by the maternal grandmother.

viii) 3rd September to 7th September 2021 – AB was in hospital for the last time.

ix) 7th September 2021 to date. AB has been living with his father.

36. **The mother** – I now want to consider some of the evidence that I have heard in relation to the mother. In doing so I have been able to draw from a statement that the mother prepared with the obvious help of her solicitor, Ms Mary Richardson. That statement must have taken days to prepare. Mr Goodwin QC said that it was the best drafted statement that he had encountered in public law proceedings. I share that view. For Ms Richardson to have dedicated that amount of time, commitment and care to the preparation of a statement in a legally aided case speaks clearly of the quality of service that she provides. I spent a day reading the statement and placing its main contents into the chronological account that I have built up of all of the evidence during the currency of this hearing.

37. The mother gave oral evidence over the course of three days. Given the findings that I am making in this judgment, it is correct to say that I have found that the mother gave evidence that was, at times, unreliable and untruthful. When giving oral evidence she was deeply distressed and had panic attacks. There were frequent breaks and by the afternoon on each day it was not possible to continue. She was very well supported by her legal team, one of whom sat with her at the witness desk in court. Having observed her for that amount of time and having read so much about her, I am left in no doubt that her panic attacks were genuine. They signalled the level of genuine distress and fear that she was feeling about the issues that were being addressed and which no end of special measures could mitigate.

38. The mother gives an account of her own childhood at C162. She grew up in the care of her parents. She says that she and her family have 'close and loving relationships' and that she is especially close to her brother [C162].

39. Dr Pipon-Young sets out some of the mother's background from her medical records at E196. In 2012 she had particular emotional difficulties as a result of alopecia and anxiety. The mother and the father began their relationship in 2014, when the mother was 18 and the father was 20. Their relationship ended 13 months later in 2015, a month after AB was born [C163]. AB is the only child of both parents. The pregnancy was not planned [C163]. The father saw AB once or twice a week when he was a baby and started having him overnight when he was about 15 months old [C163].

40. The mother has worked as a waitress, a support worker for people with learning disabilities and then, in domiciliary care; she stopped work in April 2021 due to the demands of caring for AB [E200]. Since November 2021, she has worked as an administrator for a health company.

41. Her statement includes this passage at C164:

Everything had been going really well both at work and home until I suffered a traumatic experience on 3rd September 2017. The incident was reported to the police on 4th September and a criminal investigation went on for 19 months.

Although I went back to work, I struggled to attend consistently and had a lot of days off. I had about six sessions of counselling. I then had Cognitive Behavioural Therapy after being on a waiting list for about six months. I had some medication for Post-Traumatic Stress Disorder but it gave me bad nightmares, so I stopped that and opted for more counselling. I had a few sessions of that further counselling but then AB was diagnosed with diabetes and managing that became my priority.

I didn't tell my parents. I know that I will have to tell them at some point but the right moment has not yet come. I think that with everything going on with AB, that became my focus, so what happened back in 2019 [sic] drifted into the background and was not something that I gave much thought to following his diagnosis.

42. It was neither right nor possible to explore that passage with the mother in oral evidence. It requires sensitivity, sympathy and care. The mother was aged 20/21 when this event occurred. She was living at home with her parents and her brother but, for the past five years, has shouldered the immense emotional burden that arose from it without telling her parents or having open family support.

43. Of course there is a real danger of entering into speculation and misinterpretation in relation to this arena of evidence. However, it does signal to me that: a) at the time with which I am now dealing this mother was bearing some considerable emotional burdens from her past; b) despite the maternal family being close (as I find it to be) there is a margin down the page where the mother keeps (and is able to keep) to herself some substantial emotional stresses.

44. She says that '*[I] was never good academically at school. I failed all of my GCSEs… when I sat in class, I never really understood what was going on, especially maths….I went straight to college to study childcare…I missed a lot of year 11 as my hair started to fall out...it caused me lot of anxiety. I was bullied…it was during my pregnancy that my hair returned to normal. ...I started college at the age of 16…The college did an assessment…which showed that I had dyslexia and dyscalculia. My numbers would get mixed up, so I would confuse 9 and 6. I couldn't estimate numbers and I got really anxious about adding up and performing calculations. ...my apprenticeship ended because I was not able to meet my targets because of the written side of it*.' She describes the employment that she has had at C164.

45. In her statement, the mother says as follows [C158]:

- '*First and foremost, I would like to make clear that I have not injected AB with insulin with the intention of inducing hypoglycaemic episodes. I have followed his treatment plans closely and have always wanted him to be well and have a "normal" life. No part of me has wanted him to be missing out on school, making friends, or being seriously unwell and at risk of neurological issues or death. That idea is abhorrent to me.*

- *In saying that I have wanted him to be well, I draw attention to the fact that prior to AB's diagnosis of Type 1 Diabetes, there have been no concerns that he has been harmed in any way by me; there has been no social services involvement previously; the school never raised a concern about my care and there isn't a history of me seeking to gain attention via unwarrantedly presenting him to the GP or hospital. He has lived with not only me, but his maternal grandparents and his maternal uncle throughout his entire life. None of my close family members who observed him and me every day since his diagnosis, have seen me deviate from his treatment plans. No one has ever observed me to be cruel or unkind to him. In fact, all my actions have been guided by my absolute wish to see him well.*

- *Alongside the fact that prior to 2021 my care of AB has not been a cause of concern, I draw the Court's attention to the positive comments made at the Initial Child Protection conference [F1] about the type of family that he belongs to, as well as comments made about my bond with him:*
  - *i) Chairperson: "The family was a massive strength and chair had felt overwhelmed and emotional during the conference at the love and commitment she'd seen from them".*
  - *ii) The Father: "He is missing his mum a lot."*
  - *iii) My mum, MGM: "They adore each other so much. He is amazingly kind, lovely, and adores his family and his home."'*
  - *iv) Social worker: "On a number of occasions throughout the assessment period I observed warm interaction and attachment between AB and his mum as they giggled and play wrestled together both in the hospital and at home."*
  - *v) Social worker: " the Mother went over to where AB was sat and cuddled him - I observed warm interaction between AB and the Mother."*
  - *vi) Social worker: "AB presents as a happy boy who has a strong attachment to his Mum ; I have observed warm interaction and playfulness between AB and his mum during my visits to him in hospital and at home."*"

46. **The mother and AB -** Each professional witness who knew the mother was asked by Mr Goodwin QC about her relationship with AB. In particular, he asked about her attitude to his diabetes, his treatment and to the professionals involved in his care. I treat this evidence that the witnesses gave as important; it is not just a make-weight issue or one of platitude. These are some of the main things that the witnesses said:

    i) Dr G said: **'***The mother said that she did not want insulin to be given intravenously if that could be avoided. There was no time when the mother was seeking more invasive treatment. When I was saying that the mother did not want IV treatment I was not saying she was being obstructive, simply she did not want it. She was co-operative, open to advice and plainly concerned for AB's welfare. She was anxious to protect him against unnecessary medical intervention and was displaying anxiety about the effect of 'all this' on her son. She was also saying that she was anxious about how unstable his blood sugar levels were. A lot of parents are anxious when a child is diagnosed*'.

ii) Dr B said: '*I remember how she talked about her son and her anxiety about what he was going through and the lack of explanation which she found upsetting and frustrating. I had no sense that the mother was enjoying the attention of being on the ward. At times she appeared exceptionally patient – prepared to stay for as long as it took. Paediatric care can be overwhelming for the parent. At times, I note, the medical records say she was overwhelmed*'.

iii) Headteacher of AB's school said: '*There was a collaborative relationship between the mother and the school. The Mother was wanting to work with the school to address the problems. The mother was keen that AB should be stabilised [C66]. He did not like injections but he was a stoical little boy. He was a good communicator and kept the school informed about what was going on. I am not suggesting that she was difficult or obstructive – anyone who read my statement as suggesting that would be wrong. She was very concerned that he did the best that he could at school. She was collaborative with the school, as was her mother. If someone suggested that I was suggesting that the mother was attention seeking, they would be wrong… The mother and AB have a very, very unique bond, a special bond. Ms W (works in the school) would say the same. They were very close. AB was really distressed when they were separated. His dream is to live with mum and visit dad. He misses his mum. AB liked adult company. He was very chatty and sociable and continues to be. AB is definitely very open about home life. He is an open boy'.*

iv) Nurse S said: '*The mother engaged with me. I did not find her obstructive. She did contact us. We have a specialist line on which parents can contact us in hours and an out of hours number. When we have contact from our families, our aim is to stabilise blood sugars or answer parents' enquiries. Our role is to give specialist standard advice, always tailored to that family. ...The mother contacted us as expected. We were unable to stabilise AB's blood glucose levels and to avoid admissions. It was palpably clear that the mother wanted AB to be as healthy as possible and she wanted to do her best for him. She appeared to care deeply for him. Apart from the allegation of administering insulin there was no evidence of her mismanaging his regime. She was a younger mum and had a support network round her*'.

v) Nurse L said:

a) *'The mother was keen to work alongside me. I never felt that she wouldn't call me if there was a concern. She made a habit of contacting me when she needed advice. I spent a lot of time calling her and I saw her frequently. I had no concerns about how she was with AB. It's difficult to provide education when there is a young child to care for as well. I did not have any particular concerns – I would have noted them if I had.*

b) *The Mother, like any parent, was knocked for six by the diagnosis and its implications grew. She took on everything that we taught her and carried it all out. She was absolutely very keen to get it right for AB. She was concerned that the school might not get it right and so we contacted the school quite frequently.*

c) *She wanted to minimise for AB the implications of having injections and treatment. She rang me once when there were difficulties with injections and she wanted to know how to make it better.*

d) *I did not form the view that she was trying to pump him full of as much insulin as possible. You often think: 'what is going on?', but then you do with diabetes. It's a case of investigating why the blood sugar levels go up and down. In the early months of diabetes you do see levels going up and down – this was more than we usually see but this was a child who had periods of illness.'*

vi) Dr A (psychologist) said:

- *'The mother never missed a session with me. She was engaging and engaged. I felt as though she was open to me. I would like to think that she formed a good therapeutic relationship with me. From the start she was using strategies that were really helpful with AB – a playful approach to explaining what diabetes is about.*

- *My impression was that she was focused on making things better for AB. She discussed the effect of long hospitalisations on AB; that really worried her. She was very attuned in relation to the effect on AB of hospitalisation.*

- *The mother was communicating to me her distress about the instability and uncertainty in his diabetes management. The view that I formed was that she wanted normality for him.*

- *At no point did I feel that she was working against the nurses or being obstructive or disengaged. If I had picked up on any safeguarding concerns, I would have passed them on to other members of the team. I would be looking out for any signs that she was not working with the team.*

- *I can't tell you whether someone is being truthful but can say that her affect matched what she was saying. I can't say whether insulin was given by the mother but I can say that when I had interactions with the family, I felt the engagement with me was appropriate and that there was a lot of love between the mother and AB.'*

vii) When giving evidence about a discussion with the mother during the period of enhanced supervision (29th July to 24th August 2021) and in which the mother was informed of the suspicions of FII by proxy, Dr A said: '*the mother responded very appropriately to this. It was a difficult meeting. She*

maintained her focus on AB. Nothing was ever said that made me think that the Mother wanted to hurt her son. Everything that I saw, made me think that she wanted to protect AB. I never formed the view that she did not care about the management of his diabetes. I did not think that I saw any attitude on her behalf – I thought that she was appropriately concerned about AB's health. When times were tough for the Mother her responses for AB were entirely appropriate. She did not over-dramatize.'

viii) As Mr Goodwin QC and Ms Barrett submit in paragraph 9 of their closing submission: '*In his oral evidence the father audibly laughed at the idea that the mother might want to hurt AB….when he was asked to confirm that it was terrible for the mother when AB was moved from her care, he spontaneously said 'not just for the Mother, but for AB as well.'*

47. As to her experience of being in hospital, the mother said this [C167]:

'*in March and April 2021, he had water infections (UTIs), which I believe had an impact on the amount of insulin he required and how well I was able to manage his blood glucose levels. In April, he was also put on an insulin pump, which seemed to make him go really high, for reasons that I can't explain, so he was taken off that on 13th May 2021. In June, he was put back on an insulin pump which again seemed to make him go sky high, for reasons that I can't explain. It was also in June and July 2021, we had intense heatwaves (the hottest temperatures in the UK ever recorded) and during each heatwave, I noticed a very clear link between the heat and his multiple hypoglycaemic episodes. It was also during the June heatwave, that AB had his first ever symptomatic hypo. After he was put back on Novorapid and Lantus on 30th July, he has had regular but treatable highs and lows, aside from the difficult hypo on 3rd September 2021, which led to him being removed from my care.*

The admissions were not pleasant experiences; they were a combination of being exhausting, boring, stressful, distressing, lonely and isolating. For example, the nurses didn't know how to do the correction doses on the insulin pump, so they would have to wake me up every two hours to do the doses whilst they watched. Being woken up every two hours for weeks on end is horrible, but aside from being tearful through sheer exhaustion, I never complained because I believed what I was doing was in the best interest of my son, who I love so much. I didn't like being in hospital, in truth I hated it, but it had to be me with AB, as my mum worked, so could only help on the odd day here and there. The Father had work too so wasn't able to help. I didn't want to leave AB alone, so it would be me at the hospital, day and night helping with his care and making sure he was ok. I would sleep on a small pull-out bed next to him, on a noisy ward. It was noisy all of the time, even through the night. The nurses were loud, machines would be beeping, doors opening and shutting. It was awful.'

48. **Dr Pipon-Young, dyscalculia and numeracy** – I will now turn to the assessment of Dr Pipon-Young [E192]. She concludes that the mother is likely to function within the borderline learning disability range and to have 'an overall general ability index between 67 and 77' [E205]. She says that '*The mother has relative strength in her literacy, verbal skills and visual memory abilities. She has deficits in her working memory, processing speed, verbal memory and mathematical abilities. A diagnosis of*

dyscalculia is made but not a dyslexia. It is concluded that the mother's cognitive abilities, specifically dyscalculia, could impact upon her ability to follow AB's treatment plans related to Type 1 diabetes, particularly if these require even basic mathematical knowledge and skills. The mother's medical records indicate some history of mental health difficulties and sensitivity to stress. This could have further impacted upon the emotional and cognitive resources that the mother had available to manage AB's care needs.'

49. At E211 Dr Pipon-Young says:

- '*In reaching my conclusions, I am mindful of Professor Hindmarsh's report which states that AB's diabetes treatment plans would require a high level of proficiency with numeracy, including confidence with managing decimals. I am also aware from the court papers that AB's treatment plans have changed multiple times since he was diagnosed with Type 1 diabetes. Having assessed The mother, my view is that she shows significant deficits with her mathematical abilities as well as a borderline learning disability. Whilst not aware of the specifics required in managing AB's diabetes, I find it conceivable that the mother could have become confused and muddled if these treatment plans involved numerical calculations, which frequently change (I understand from the court papers that this is the case).*

- *To contextualise the extent of the mother's dyscalculia, during testing she could not complete the following tasks:*

  i) *subtracting two digit numbers from each other such as 68-43, either using a pencil or pen or mentally.*
  ii) *accurately subtracting single digit numbers such as 9 - 4 = 5, despite counting this on her fingers.*
  iii) *completing any form of division tasks such as dividing 16 by 8 .*
  iv) *understanding that 0.8 and 0.2 = 1.*
  v) *understanding fractions.*
  vi) *recognising that 20p is less than six 5 pence pieces.*
  vii) *accurately naming the missing number in a sequence such as two, 4, 6, 8 …*
  viii) *understanding a simple bar graph or line graph.*
  ix) *reading an analogue clock. She could understand the 24 hour system but this was slow and effortful for her.*

- *I would also add that the mother is of low overall intellectual ability, has extremely low processing speed, limited verbal memory abilities and extremely low working memory capacities. These are all likely to have implications for her ability to remember instructions accurately, particularly over time and if provided verbally. I would further comment that as the mother has relative strengths in her language abilities, this may make her seem more able than she actually is. In other words, professionals may not realise the extent of her deficits because her vocabulary, reading abilities and ability to follow conversations appear relatively intact.*

- *In terms of the relative impact of tiredness and stress, in broad terms these could conceivably impair performance and increase the likelihood of mistakes, although it is worth saying that research evidence is rather equivocal…*

- *In relation to fatigue, again the evidence is not conclusive although subject reports of reduced cognitive performance related to tiredness are common.*

- *In summary, given the mother's clinical presentation during interview, her cognitive profile and possible propensity for anxiety, low mood and sensitivity to stress as indicated by her medical records, then I find it plausible that her ability to follow AB's treatment plans accurately would be worsened by stress and tiredness. Specifically, I noticed that The mother became flustered and stressed when faced with tasks she found difficult during my assessment, particularly those requiring numeracy skills.'*

50. In response to questions put to her on behalf of the Local Authority, Dr Pipon-Young filed a supplemental report on 11th July 2022 which included:

    - '*Turning now specifically to my interview with The mother, my diagnosis of dyscalculia did rely on her self-report to an extent as would be the case with all cognitive assessments. Specifically, the dyscalculia diagnosis was thought to be consistent with her reported educational history and functional difficulties (e.g. using bus timetables; difficulties budgeting; finding it hard to follow a recipe; difficulties telling the time).*

    - *I have tried to be as transparent as possible about how I have reached the conclusion that the mother's results were more likely to be genuine than not*'.

51. MGM said as follows in her statement about the mother's ability to calculate and work with numbers:

- '*I remember that the Mother did a child care course at college. She was really upset as the teacher said she would never pass the course as she couldn't do the maths part of it. She was very upset and crying. She has always been bad at maths, and her brother too. I don't know what it must be like for them. Her primary school queried whether she was dyslexic but back then it wasn't assessed properly like it is now. The Mother saw the special teacher for more support with reading. It was really hard helping her with her homework when she was little as she just didn't get it. Secondary school gave no support whatsoever. They described her as lovely and friendly, but said she struggled. It was only at college that they told her she couldn't do maths. I remember her saying back then that she done this maths assessment and that her college teacher had said she would never pass the maths grade. She said something along the lines of having a proper problem with maths; she was crying about it. I can't recall whether the term dyscalculia was used or whether I thought she was saying dyslexia.*

- *She was always in the lowest sets for school and for her maths GCSE she had to take three tests; she got two "G" grades and one "U" grade. At the time a "G, was one above a "U", which stood for "ungradable". I exhibit to my statement her GCSE*

results [EXH.KR-2]. The Mother has always struggled with numbers. She will hate me saying this, but she is shocking with money, like working out how much things cost. She was always asking me to add up things for her when she was working. She didn't understand percentages, so when tax was deducted from her income, I would have to explain why tax was deducted and what a percentage is. I am not even sure to this day if she can tell the time using a clock with hands, that is the truth. She can tell the time on her phone, but I don't think she can look at a clock and work out the time. Even now, she will say "what is 8?" and I will have to tell her it is "20:00" when using the 24 hour clock. Or if she saw a time written down such as "23:00", I would have to tell her it meant 11pm. I don't think my son can read a clock either. If she had to be somewhere at 15:30, she would double check with me and I would tell her she had to be there at 3:30pm.

- *If there is a long sequence of numbers, such as telephone numbers, she would be able to read it out aloud, but she would probably get some of the numbers in the wrong sequence. Also with reading, she will get the letters in the wrong order, say there's a word like "mane" she will say "name". I noticed that a lot when she was younger. The maths though, was the really difficult area for her.*

- *She recently received an electricity bill for her new flat; she has to pay a set amount each month. I was telling her, "you pay that set amount and it puts electricity in the pot so in the summer when you use less, that makes the pot grow more, so in the winter you not paying more". She didn't understand and just couldn't get why her heating costs wouldn't go down in the summer. I tried to explain it, but she wasn't getting it. She didn't grasp about spreading the cost over the year. With moving away from home for the first time this year, she struggles with understanding the bills; I try to explain to her as much as I can.*

- *The Mother was really upset about the expert cognitive report in these proceedings, understandably. I tried to explain to her that "it doesn't mean you are thick, just that you see things differently in one area". I had to reassure her that she isn't stupid, that she is kind and loving.*

- *To help her out with the carb counting, I would portion out AB's food and put stickers on each food container telling her how much carbs were in the portion. Carb counting was a lot of work so I tried to make it easier for her. The Mother would have certainly thought that she done it right and would absolutely never be blasé about his carbs. She did her best to be accurate. She really tried to take on board everything the nurses told her and really did want to do the best for him. I wasn't aware of her making any mistakes either and thought she was able to manage*'.

52. In oral evidence MGM said: '*When AB was first diagnosed, I was invited to the hospital to have training – about 30 minutes. I was aware that AB needed to input the number that the machine calculated. I knew that the Mother was carb counting. The Mother could use a calculator. The Mother was more competent with injections than I was. As far as I was concerned, the Mother was not making mistakes. She could have been making mistakes but she tried her hardest. I did not tell the nurses that I was concerned about her ability with figures.*'

53. The mother said as follows in cross examination: '*In November AB was diagnosed with diabetes. I had an introductory session with the nurses. My mum came on the Friday or Monday for training. I think that it was one of those things where you get chucked into it and you get on with it. When AB was first diagnosed we did not do the carb counting – he was on a set dose of insulin. Carb counting came a few weeks in. We had to keep a food diary and my mum emailed the dietician. We did calculate carb but we did not put it into action to begin with. We had carbs and cals book for information to put into the meter. If AB was having a simple meal, sausage and waffle as he would have regularly…that was fine. However, it was more tricky when there were things like spaghetti and, for instance, you only had half a jar of Bolognese sauce and you then have to calculate it and I struggled with that. I would turn to my mum. I had my phone and calculator. I had to google how to do the carb counting manually on a calculator.'*

54. The passage in Professor Hindmarsh's report about the mother's numeracy is at E70 and reads:

'numeracy is extremely important either for the calculation of short-acting doses or for interpreting the output from the calculations undertaken by the Smart Meter. Understanding the issues mother has with numbers would be important in this respect particularly her ability to adequately dial up/draw up insulin doses. Excess insulin administration could result from inaccurate carbohydrate counting where the meal carbohydrate content is overestimated, and consequently excess insulin is administered. This is harder to invoke as the cause of the July hypoglycaemic episodes which took place late evening and after the insulin infusion was switched off. There is the possibility that these episodes resulted from a bolus from an intravenous flush given at the end of the insulin sliding scale infusion (12). The Hospital has made the following comment. "It is the expectation that once an infusion stops, it is disconnected, and the cannula is flushed. Upon review of the documentation, we are unable to confirm with any certainty that this was done and therefore we cannot answer this question." As argued earlier (page 12) this bolus alone would not explain the prolonged nature of the hypoglycaemia nor the plasma insulin concentrations of 9.7 and 160 mU/l that were detected. These values imply that additional exogenous insulin would need to have been administered.'

55. In oral evidence, Professor Hindmarsh said as follows about numeracy:

- Numeracy is a significant issue. The pump system does have an on-board calculator. For the pen injection systems there is a similar arrangement with a blood glucose meter. You have to dial up a number of things. I would need to know a lot more about what education was given and how closely it was followed. It did look as though advice was sought and how well that was executed is a point for debate.

- Numeracy and dyscalculia – An understanding of numbers and decimal points is important for the parent. The conclusion of Dr Pipon-Young is that it is conceivable that the mother could have become confused if calculations are involved – '*her conclusions chime with my view*', Professor Hindmarsh said. It is not just simply about the ability of the parent to undertake multiplication etc it is also about a parent's ability to put numbers into a machine. If there is a dose

that has been offered, you have to be able to calculate that it is an appropriate dose – the pump system has its own calculator and it will work out a correction ratio but you have to recognise that number, produced by the machine, as being correct. The calculation would be a button push on the pump but, on a pen, you would then have to change the dial and have to round the figures up or down due to increments on the system – if you had 3.25 units you then have to decide whether it is 3 or 3.5. Numeracy affects both the pump and the pen.

- Numeracy also affects carb counting. At E70, Professor Hindmarsh said: '*Excess insulin administration could result from inaccurate carbohydrate counting where the meal carbohydrate content is overestimated, and consequently excess insulin is administered. This is harder to invoke as the cause of the July hypoglycaemic episodes which took place late evening and after the insulin infusion was switched off'*.

56. I have already stated my conclusions about how the mother's dyscalculia is relevant to this case.

57. **Training -** I did hear a lot of evidence about the training that the mother had and her response to it. I wish to record some of that evidence now. My opinion is as already stated.

58. AB's initial treatment is described at E52 by Professor Hindmarsh where he says: '*AB was started on Novorapid (ultra-short acting) insulin in doses of 2, 3 and 2.5 Units with breakfast, lunch, and dinner respectively with background insulin provided by the long-acting insulin Glargine, at 6 Units per day. The total daily dose was 13.5 Units or 0.8 Units/kg body weight/day. This is a high dose as the normal dose at diagnosis is 0.5 Units/kg/day, so it was not surprising that the dose needed to be reduced over subsequent days. The education and training provided was to a high standard. AB was over the age of 5 years so technically beyond the age of starting immediately on insulin pump therapy at diagnosis along with Continuous Glucose Monitoring.'*

59. At E2 Dr B says: '*During AB's initial admission following diagnosis of diabetes, he was commenced on insulin injections at mealtimes and at bedtime with the aim of maintaining blood glucose levels within or close to the normal range. His mother received training in the management of AB's diabetes from the Diabetes Nursing Team and Dietician, together with support from the Clinical Psychologist. [The mother] demonstrated satisfactory understanding of diabetes and was assessed as competent in the day to day care of AB's diabetes. Ongoing education and support has been provided by the diabetes multidisciplinary team and at no point has there been any concern that The mother lacked the knowledge or skills to safely manage AB's diabetes.'*

60. Dr G said in oral evidence: *The mother was provided with education and training – this is provided by the multi-disciplinary team – consultants – nurse specialists – dieticians and psychologists. It involves training the family how to administer the medicine. There would be training and education over about two days. There were no concerns about the mother's ability to understand the training. AB was discharged home once the team felt that the mother demonstrated a satisfactory understanding of diabetes and competence in managing AB's day to day diabetes care. I was not aware*

of any difficulty that the mother had in calculating. The mother did not raise any such difficulty. No concerns were raised by nursing staff about the mother's ability to understand the training and education [see last sentence on page C47]. *During the period November – February, I was not aware of any concerns about the mother's ability to understand the use of short term and long term treatment. During that period there were no significant issues requiring hospital treatment.*

61. In her statement at C21, Nurse S explained that the 'PDSN team' is responsible for educating and supporting children, young people and their families in the management of diabetes. She says:

- '*Our role is to ensure that diabetes is managed in an optimum way each day, to prevent long term complications associated with diabetes. We do this by educating those who will care for the child, give advice, review blood glucose levels, management of illness and effect on blood glucose and ketone levels, signpost, offer and utilise all available diabetes technology, offer emotional support and ensure that care and support is tailored to the individual child and family.*

- *The PDSN Team delivered an education and training programme for the mother and AB, which is standard practise for all newly diagnosed children. The aim of this programme is to teach him, give the tools the mother and other family members require so that they can safely manage AB's diabetes at home. The management of diabetes is complex and involves the monitoring of blood glucose levels, daily insulin injections and maintenance of a healthy, balanced diet.*

- *As part of the new diagnosis education, my colleagues will have trained the mother on how to undertake finger-prick blood tests for glucose and ketones, treatment of hypoglycaemia , management of hyperglycaemia and episodes of sickness and how to administer insulin injections. My colleagues will have used our standard assessment of competence to deem the mother as competent and safe to manage AB's diabetes at home*'.

62. In oral evidence, Nurse S said that she was not involved in the initial admission; she merely gave an overview in her statement of what had been provided. She said that she is experienced in training and educating parents in the treatment and care of diabetes. She said: '*we have a checklist that we work through to assess competence and then we have a question and answer session, there are games that we play and scenarios that we discuss to check understanding [I3317]. The team would teach carbohydrate counting. The mother did not say to me that she was not able to calculate.'*

63. Nurse S said that no-one expressed doubts to her about the mother's cognitive functioning (I add, even though the mother, in fact, *does* have limitations that are set out in the report of Dr Pipon-Young). Her experience of the mother was that she could explain herself reasonably well. She said that there was no consideration that the mother might have a learning disability and there was no thought about whether the mother's verbal skills might mask her true understanding. She said that she had no indication that the mother had dyscalculia when she spoke to her and gave her advice. Specifically, Nurse S also said: '*In terms of the advice given to the mother, if AB is*

found to be unconscious what advice would she be given? She would be advised to give an emergency intramuscular injection but we would always ask them to call an ambulance. It would be expected that they would contact the diabetic team at some stage to review BSL and to suggest insulin changes. I would expect a call the next day.'

64. The initial training and education was given by Nurse T. Her statement at C15 describes it. She says that the initial education included i) what is diabetes?, ii) understanding insulin and its action, iii) how to give an injection (children need 4 + injections a day), iv) how and when to do a blood test (children are tested 6 + times a day), v) dietary advice and carbohydrate counting by dietitians and followed up both at home and in clinic, vi) managing hypoglycaemia and actions required, vi) managing high blood glucose levels and testing for ketones, vii) basic sick day rules.

65. In oral evidence Nurse T said:

    i) '*Within the training that we do, we observe a parent doing injections and blood tests and then we have learning aids that highlight signs and symptoms that a parent might need to understand. We always make sure that the parent feels able to care for the child before discharge.*

    ii) From the notes that I have, there is nothing written to suggest that I was concerned about her understanding. She would question me if she needed to. I always felt that she had a sufficient understanding. I think that she would have asked questions if she did not understand. I felt that the mother and I had a good relationship and that she would text me if she had concerns. She knew how to contact me and did so and also contacted out of hours.

    iii) The mother did not express concerns about numeracy. There was no investigation of whether the mother suffered from dyscalculia. If she did have it, we did not take it into account.

66. Nurse G, another PDSN said at SB-C11: ' *The Mother appears to have an appropriate understanding of AB's diabetes, the treatment plan and the care required to manage his diabetes. The Mother was able to use the expert blood glucose metre to obtain insulin doses and was competent in inserting the Libre sensor. When reviewing blood glucose levels with the Mother and advising changes, I would provide education, information and rationale for the changes I was advising to develop her knowledge.'* At SB-C12, Nurse G says: '*my interactions with mum, both on the telephone and on the ward, were to offer support and advice. I haven't had any concerns during those interactions that Mum didn't understand the diabetes care required.*' Once the mother was carb-counting she would have used the meter – she would put details into the machine and then calculate the amount of insulin that was necessary.

67. Dr B, who is now a consultant paediatrician but was serving in the role of registrar in the paediatric diabetes ward at the time, said in oral evidence: '*I discussed AB's progress with the PDSN and the mother. I was present on each of the ward rounds and I also updated her some evenings after decisions had been made. As to the mother's understanding about AB's diabetes and treatment, I know from the PDSN that the*

mother had had adequate training and was deemed to have taken that training onboard. My assessment was the mother was able to understand diabetes management and to use what she had been taught to control the diabetes. As to the mother's ability to calculate the treatment, I am unable to answer that question. We did discuss activities and foods and her answers seemed appropriate.'

68. Staff Nurse H said '*the mother was very good at being able to manage AB's routine as to blood glucose monitoring and carb counting. The mother had a very good numerical ability to do the carb counting. I say that based on the fact that, when we redid the calculation, she had the same answer as us.'*

69. **The maternal grandparents** - I now wish to record some more details about the maternal grandparents. They are important figures in this case because, until February 2022, the mother was living with them. I only saw the maternal grandmother in oral evidence.

70. The maternal grandparents. They are aged 52 and 54. The mother is the youngest of their two children; J, their eldest, is aged 29. MGM's son, D, was born in 1988 from a previous relationship; he has always been brought up as part of their family. The MGPs have been assessed positively as potential alternative carers for AB, if the need should arise. They have direct, unsupervised contact with AB each Sunday from 9 a.m. to 1 p.m., along with other members of the maternal family.

71. MGM works on Wednesdays and Thursdays, Fridays and Saturdays - SB-C87. J works nights and appears to have played little part in the issues relating to the care of AB.

72. The parenting assessment of the MGPs speaks very highly of them and recommends that they would be suitable special guardians for AB if the need arose. At F118 the assessing social workers, wrote: '*From all the information contained in this assessment it is clear to me that AB is a loved and cherished grandson who is deeply missed…They both spoke confidently about managing his diabetes.'* At the time of the report the authors were aware that there were allegations that the safety plan that had been put in place when AB was discharged from hospital on 24th August 2021 had not been observed by the grandparents. As a result, the authors had to give a guarded view until the conclusion of this hearing. Although there are issues of fact that I have to resolve about the 3rd September 2021 I do not accept that the grandparents ignored the safety plan.

73. My impression of the grandmother is reflected in the assessment of her. She and her husband have a 'strong and stable relationship' [F111]. They have been able to maintain relationships with the paternal family despite the strains of the past year. They do not have criminal convictions and are law abiding people. They both work and are appreciated by their work colleagues [F118]. Their home is well maintained and 'welcoming' [F108]. I agree that they are a united family but there is still the emotional margin between the mother and her parents that I have already described. I have no doubt at all that MGM was unaware of the more exaggerated messages that the mother was sending about AB, sometimes to men whose identity the mother 'could not remember' when giving evidence.

74. In her statement, MGM says: '*All I know is that when AB was here with us, to the Mother's ability, she tried so hard to manage it all. She tried her best; she followed all of the nurses' advice and was doing everything she could on a daily and nightly basis. That was really clear to us and there were no occasions where it looked like she wasn't trying her best. There were times when AB was on set doses of insulin and other times when she had to do carb counting. She always phoned the nurses for advice, she never just went off on a whim and decided what to do. She was stressed and anxious about getting it right. It was a lot to learn for her, a lot for all of us to learn, and we also had to adjust to the fact that AB had a life changing medical condition'.*

75. In oral evidence MGM said the following, amongst other things:

i) It was not unusual for the mother, to ring her 5 – 6 times a day asking questions such as how to cook pasta. She says that she never saw the mother giving AB extra insulin and, if she had, she would have '*100% said something…I find it inconceivable that she would have deliberately injected him to cause a hypo… she wanted him to have a normal life, go to school, have normal holidays.'*

ii) ' *The Mother is a very loving Mum. She always puts AB first. She can be a bit messy. She is a very warm and honest young woman. AB was amazing – he took on the treatment really well. The one person whom he wanted to do his injections was his Mum. In day to day life, we always knew she was not good with numbers, she struggled with numeracy. She is shocking with money.'*

iii) She never noticed the mother making mistakes. If the mother was with MGM she would often ask MGM to do calculations and would also ask things like 'how many grammes in this' or 'mum, do I calculate that or not?'

iv) She would never double check the mother's calculations unless asked to do so and did not observe the mother making mistakes when she was doing carb counting, dialling up insulin pens or drawing insulin in syringes.

v) The mother would contact the diabetic nurses if the mother had doubts about how she should care for AB in relation to his diabetes.

vi) The mother was 'exhausted' by managing AB's diabetes. She says: '*The Mother was so tired. Before he had the Freestyle Libre, you would have to finger prick him every two hours throughout the night. She was absolutely shattered. When AB was in hospital, because of the pandemic, I could not go in and support her… there were lots of tears from the Mother, especially when she was really tired.'*

vii) [As in paragraph 22 of her statement], she (MGM) denies the suggestion that AB had a bad diet and says that he rarely had a McDonalds.

76. MGM describes the impact of the allegations that the mother faces in these terms in her statement (paragraphs 35 and 37): '*When I first heard the allegation that the doctors thought the Mother had been injecting AB on purpose, I was absolutely devastated and knew it wasn't true. Our lives have been absolutely shattered by the allegation. We know our daughter and we know she wouldn't have done that. We can't believe it. We know our daughter. There is no way that she went around injecting him, behind our*

backs without us ever noticing anything. I am absolutely devastated for AB more than everything; what he has been through is just awful…Trying to support the Mother since AB's removal in September 2021, has been really hard. She doesn't want to be here, not without AB. She is absolutely broken and devastated being without her child…She puts on a brave face but she needs to be able to let it out and she is able to do that with me, her dad and her brother. It is mostly sobbing to be honest.'

77. That last passage from MGM mirrors what the mother says at the end of her statement in these terms at C219 and reflects some of the human misery that this case depicts so graphically:

'*The distress and anxiety of being accused of making AB hypo on purpose and then losing him has been immense. On 14th September 2021 I suffered a massive panic attack shortly before the ICPC and was not able to attend as a result. Back home, I took too many sleeping pills that had been prescribed around that time because I couldn't sleep and was constantly up in the night over thinking about everything. After I had been arrested I had gone downhill. I said I couldn't go into the ICPC so my dad dropped me home. I didn't think about what I was doing when I took them; I just felt so blank and empty. I don't really remember much but my brother found me and called the ambulance. I was taken to hospital and discharged later that day after seeing a mental health nurse. I have since sought counselling and had an assessment with Vitamind but they said they weren't the right service for me, so I was referred onto Woman's Aid and am waiting for an assessment with them. Vitamind said what they thought I needed was for someone to sit and listen to me. I am currently on Mirtazapine to help with my anxiety and depression; my mum handles my medication and I am not allowed access to it. My GP is aware of what happened and said there will be a review. I've had a mental health nurse ring me as a follow up but there hasn't been any further contact from the mental health team.*

The reality is that I don't feel ok and I have spoken to the Samaritans a few times. I've broken down a few times to my mum and said I don't want to be here. I feel like my main reason for living has been AB. Sometimes I wake up and think he's there and he's not. I still wake up two hourly thinking I need to check his levels and then realise he's gone. I find it very hard to talk about what I am going through. I'm good at putting on a jolly front but the reality is that my world has totally crumbled since he was removed from my care in September 2021. I don't get to see him doing his funny stuff or saying his hilarious things or hug him in bed in the morning. I feel like everyone is judging me and thinking I deserve this'.

78. I consider that MGM provided important evidence.

79. **The Father –** I have already referred to the positive assessment of The Father (it is at F73 and is written by the SW). Her statement at C2 (paragraph 1.5) continues that very positive assessment of him and his Partner. I have noted the absence of any hostility that has been expressed by either of these parents against the other for which they both deserve credit.

80. The following are some of the key points of The Father's's oral evidence:

- ‘*We are having a problem with high blood sugars at present at school. We do not have a similar problem at home. I do provide him with treats; he is allowed to have them. You have to work out correctly what to do. Treats are like, an ice cream or a chocolate bar – whatever he wants. You then have to work out how much insulin he needs to have that treat. My mother, my partner and I would decide on treats.*

- *He hasn’t been to hospital since being in our care; we nearly did when he had Covid. The school has not rung us to say please come and collect him, he’s unwell. I have not had him being dizzy or in a daze – the school has not contacted us to say that he is dizzy or in a daze. He has never been unconscious as a result of a hypo in my care*’.

- He said: ‘*There is no hostility between me and the Mother. The mother gets on with my partner and she with her. I have no evidence that the Mother neglected AB. I have not seen anything to suggest that she would hurt AB deliberately. I know how much she loves him. I do not think that she would put AB’s life at risk.*

- *On 10th May 2022 the Mother, my partner and I sent a joint email to Nurse S. AB’s bloods had been up to 30 and 29. That leads us to believe this is definitely something to do with school. It seems to be after lunch. He is not like that at home. There is no obvious answer from the school. The school could not shed any light on it. Personally, I think that it is due to the autoshield needles and carb counting there. At one point they were using a different app from us. They were not using the carb and cals app. It is now back to the same situation – the change of app only changed the position for a bit. We have been having problems with high readings since he went back to school for this term. It is not the same problem at home. If he comes home from school high, it’s hard to give him a correction dose. It happens quite often that he is high at school. We are trying with packed lunches at present. It must be how they are administering the drugs – that’s the current thought*’.

81. The time when AB was nearly hospitalised when in the father’s care may have been in December 2021 when, on 15th, AB’s glucose reading (at school) fell to 1.2, although I note that the advocates agreed in submissions that this reading may have been an error of the school as the Diasend upload for the same time read 15.7 . The email that was sent on 10th May 2022 has been sent to me and I have read it. It reads: ‘*Just to let you know that The Father, the Mother and I have some concerns about AB’s bloods in school recently. When he went to contact with the Mother last Wednesday, his bloods were over 30. Also, last Thursday after lunch Mrs W informed us they were 26. In contrast, over the weekend his bloods have been very good which leads us to believe something is slightly off. Over the recent weeks, we have noticed that before and after breakfast club, AB’s bloods seem to be okay, they can be slightly high but nothing that would seriously concern us. Before lunch, they also seem to be okay but there seems to be a pattern of high bloods after lunch, we are unsure what to put this down to when his bloods are good over the weekends and evenings. We are concerned about the long term impacts of this on his health having Diabetes. We would really appreciate your expertise and guidance knowing AB so well.’*

82. The graphs that counsel so helpfully prepared and which are annexed to this judgment show that The Father is correct about the readings when AB is at school. However, he and his partner have been able to deal with AB’s care without anything like the difficulties that AB experienced in that respect when living with the mother. The Diasend charts [e.g. DM-I43] show that at a glance. That ‘at a glance’ approach can be

compared with DM-I31 when AB was with the mother when, over the course of seven days in her care, he had over 40 readings of hypoglycaemia.

83. I have taken into account the following particular points:

i) I recognise that, given the amount of concern that has been expressed about AB having 'hypos' when with the mother, it would be very understandable if AB had been run slightly 'high' deliberately to avoid any similar problems (I raised this and Professor Hindmarsh was also of the same opinion).

ii) I was sent a photograph taken by MGM of the Accucheck monitor for 26th June 2022 which shows that, on that day when AB was in the care of the father, there were readings of 3.9, 3.4, 3.6, 3.6 and 4.2. Of course examples can be shown where AB was hypoglycaemic to that extent when he has been with the father, at school and also in hospital. But that does not detract from the overall picture that I have already painted.

84. **Diabetes and insulin generally** – I now want to make some general points about diabetes and insulin, based on the evidence that I have heard. Some of this may appear commonplace, some of it is not:

i) As stated in the glossary, 'normal' for blood glucose levels is between 3.5 and 7 mmol/l but once a child's levels drop to 4, action should be taken. The LibreView charts 'grey out' readings between 3.9 and 10 to signify that this is the normal bracket for readings. Professor Hindmarsh said that 12 mmol/l is a definite action point. The matter that I wish to emphasise, however, is that it only takes a drop of e.g. 2 mmol/l below the 4 mmol/l point for a child to be in real difficulty (see the glossary). Readings that exceed the upper limit (I will use 12) are not so dramatic. So, a reading of 14, although high, is not going to have the same impact as a reading that is 2 mmol/l below the lower limit of 4. A brief look at the Diasend etc bundle shows that. There are times when AB's hyperglycaemia has been at the level of 27.8 mmol/l – 15.8 mmol/l higher than the upper action point of 12.

ii) If blood glucose levels drop below 4 it is merely fortuitous as to how low they will go if action is not taken. So, on 13th June, when the mother herself says that his blood glucose levels dropped to 1.3, it is merely fortuitous that they did not drop lower before action was taken. If a child is unconscious and, in that state, is not receptive to jelly babies etc, there are very obvious risks. If an unauthorised and unmonitored dose of insulin is given (e.g. on 28th July) it is merely fortuitous that the levels did not drop further than 1.4 mmols/l.

iii) It is necessary to differentiate between endogenous and exogenous insulin. Endogenous insulin is the type produced by the body. Exogenous insulin is insulin that is administered. Endogenous insulin will contain C-peptide. C-peptide interconnects the A and B chains of the insulin structure (as depicted at C63). Exogenous (i.e. administered) insulin will not contain C-peptide. Some 'assays' (i.e. blood screens tests) can determine C-peptide presence; others cannot. If an assay is of a type that can identify C-peptide and insulin, but no C-peptide is found, it means that the insulin must be exogenous – that is, must

have been administered. Professor Hindmarsh says at E63: '*Biosynthetic human insulins, made by recombinant DNA technology, only contain the A and B chain. Some assays that measure insulin in the circulation can detect biosynthetic human insulin because there is cross reactivity in the actual measurement system (the Mercodia assay in Guildford). Some assay systems cannot do this, as there is no actual cross reactivity (Roche assay in [the local area]. The different performance of assays is helpful, therefore, because it allows differentiation to be made between exogenous and endogenous insulin production. In a situation of endogenous insulin production, both C-Peptide and insulin will be measurable, whereas if only exogenous insulin is present, C-Peptide will not be detectable because endogenous insulin production is switched off and insulin measured depending on the assay used. In Type 1 diabetes mellitus C-peptide is less helpful other than describing whether there is still some beta cell function as beta cells are destroyed by the disease process so we would expect C-peptide to gradually become unmeasurable with time.*'

iv) Because of the nature of diabetes and insulin (see the glossary), diabetes will result in blood sugar levels increasing if it is left untreated. Although there are many reasons why blood glucose levels may go up and down for diabetics and non-diabetics, administration of insulin is the only 'bio-chemical' (adopting Mr Goodwin QC's word) means for the treatment of high blood glucose levels in diabetics.

v) There are many different formula-based / brand names for insulin that is administered exogenously. Some of the relevant names are given in the glossary. Some is long-acting (e.g. Levemir, Glargine and Lantus – Lantus contains Glargine). Some is fast-acting (e.g. Actrapid and Novorapid). Later in this judgment I will set out important passages of Professor Hindmarsh's evidence about the half-life of insulin – the rate at which insulin levels will diminish once in a human body. An understanding of that is essential to the analysis of the allegations relating to 24th and 28th July 2021.

vi) At this point of this judgment I also wish to refer to three points that Professor Hindmarsh made in oral evidence:

- In terms of the usual progress of a child – at diagnosis a patient will have lost about 95% of insulin production. There will still be a bit left but it is not enough to regulate glucose and eventually is eliminated entirely during what is sometimes called 'the honeymoon period'.

- It seems that, with AB there may well have been some ongoing insulin-producing action in March 2021. By July 2021, his body was producing low levels and that production was very unlikely to be responsible for the hypos in that month. By then, the C-peptide was undetectable.

- Hypos in the early months following diagnosis are not unusual due to the honeymoon period when the body is still producing some insulin. Professor Hindmarsh has never seen a case where the process of gradual elimination of

endogenous insulin has been reversed (i.e. where the body has returned to insulin production at the end of the honeymoon period).

85. **Nursing opinion** – The hospital has a specialist team of diabetes nurses. They are rightly called 'specialists' and their evidence was deeply impressive. I wish to refer now to three passages of evidence that they gave. They are these:

i) Nurse S said this about the current arrangements for AB and his current diabetic management: '*When he is not at school he is stable. Something is not quite working when he is at school. I cannot explain why that is. Maybe we need to have someone else give the medication. I cannot explain this at the moment*'.

ii) Nurse S also said: '*I would expect a child to have 3-5 hypos a week as he has been having with the father. Unconscious hypos would be exceptionally rare. It is very, very unusual to have a child who has an unconscious hypo. He has had none in the care of the father. He has not required hospitalisation in the care of the father*'.

iii) Nurse G said: '*AB's diabetes management was initially as per normal. He had significantly high and low blood glucose levels such as I have not seen before. It was challenging from that point of view. The swings from high to low were more than we would expect.'*

86. **Regulation of blood glucose levels and how it might be affected** – In his report, Professor Hindmarsh makes these important points in a passage at E68 to which I have already made passing reference:

- '*The insulin dose required as long-acting insulin is 50% of the total daily dose and given as a single dose if Glargine is used or split into two roughly equal doses for Levemir.*

- *For the short-acting insulin, the dose for food is derived from the carbohydrate ratio which allocates 1 unit of insulin for every X grams of carbohydrate. Smart blood glucose meters can be used to assist with this calculation and apply correction doses to help bring any high blood glucose concentration back into the target range. For multiple injection therapy this would mean correcting all blood glucose measures above 10 mmol/l. There are several issues that need to be borne in mind. First, when dosing for food, the short-acting insulin needs to be given 15-20 minutes before food is consumed to match the insulin delivered from the injection to the sudden increase in blood glucose that results from food intake. In young children like AB, this can be difficult as the child may not eat all the food before them which means that there is now a mismatch between what insulin was expected to be needed with what is needed now that less carbohydrate has been taken in. Hypoglycaemia can therefore result 2-3 hours afterwards. One way around this, often used by families, is to bolus after the food has been consumed so that the dose can be matched* [the word 'bolus' is defined in the glossary]

- *The problem with this* [giving a post-prandial bolus] *is that the time course of insulin action is now shifted some 30-40 minutes which leaves the patient exposed to insulin action some 4 hours after food was consumed leading to hypoglycaemia. This can be*

seen in several of the Libre sensor glucose downloads where there is a low blood glucose late morning after a high post breakfast spike in blood glucose.

- *Second, care needs to be exercised with correction doses in that they should not be given too frequently. If correction doses are given less than 2-3 hourly, then insulin from the second dose will stack on the previous one and this will lead to high plasma insulin concentrations which will have the effect of rapidly reducing the blood glucose. Third, any exercise undertaken will impact on the blood glucose tending generally to reduce it so this would also need to be considered and dosing adjusted downwards if exercise is likely 2 hours after a meal. Exercise would be less of an issue within the confines of the hospital admissions.*

- *The amount of short-acting insulin that can be administered via the pen delivery system is limited as the dose increments start at 0.5 Units and increase in 0.5 Units for Novorapid or from 1.0 Units in the case of Actrapid. For an average 6 year old the initial starting total daily dose might be 12.5 Units which would generate a carbohydrate ratio of 1 Unit of insulin for every 20 grams of carbohydrate. For a breakfast containing say 25 grams then the amount of insulin required is 1.25 Units, but the pen can only give either 1.0 or 1.5 Units meaning either you under or over administer. Similarly, the correction ratio would be 1 Unit of insulin will reduce the blood glucose by 10.5 mmol/l which means that 0.5 Units would reduce the blood glucose by 5.2 mmol/l. Given the inaccuracies associated with such low dosing on the pen systems inadvertent hypoglycaemic episodes occur.*

- *The drawing up of insulin also needs to be considered. Usually, a pen delivery system is used for injections using a prefilled cartridge and the dose dialled up on the pen system. The Hospital confirms that "An insulin cartridge is used in an insulin pen." They go on to state "If insulin in a vial is prescribed (for example in patients who require an insulin infusion), the nurses use an insulin syringe which only draws up in units. When this patient was prescribed a type of insulin that did not come in a cartridge, in this case only, the insulin was drawn up and administered using an insulin syringe from a vial." This has been clarified further by the Hospital. "We can confirm that the insulin was not taken from a cartridge with an insulin needle. The cartridge was in an insulin pen and the pen was used to administer insulin. When the drug chart has vials ticked it was because AB was on an insulin infusion and then the insulin was drawn up with an insulin syringe and put into a bigger syringe and diluted as per infusion guidelines." This is important clarification because drawing up small doses using an insulin syringe from a vial can be inaccurate. Based on this clarification, we can discount inaccuracies in drawing up insulin for administration as a cause for the hypoglycaemic episodes.*

- *Insulin dosing probably explains the problems encountered in March 2021 after an increase in insulin dosing following the urine infection. As noted, post meal hypoglycaemia can be noted on occasions in the Libre glucose sensor downloads. With all these steps numeracy is extremely important either for the calculation of short-acting doses or for interpreting the output from the calculations undertaken by the Smart Meter. Understanding the issues mother has with numbers would be important in this respect particularly her ability to adequately dial up/draw up insulin doses. Excess insulin administration could result from inaccurate carbohydrate counting where the meal carbohydrate content is overestimated, and consequently*

excess insulin is administered. This is harder to invoke as the cause of the July hypoglycaemic episodes which took place late evening and after the insulin infusion was switched off [his report then goes on to consider the events on 24th and 28th July which I will look at separately].

87. The above important issues were explored further in oral evidence and were examined in the closing submissions that were advanced on behalf of the mother (within the 16 points in paragraphs 26 to 42 of the submissions).

88. I will now set out some of the oral evidence that I received on these points:

i) Professor Hindmarsh said: '*Hypos therefore do happen in this age group as it is quite difficult to match up the insulin with the food. It would be unusual for this to get to the level of unconsciousness but may be in high 2's… Exercise can be a factor that leads to fluctuation. Pen accuracy is a problem – this is a mechanical issue with the device. When you get down to e.g. 0.5 the error on what can be delivered can be anything up to about 5%. That may not matter for an adolescent or adult, but when you get down to a child of AB's age, that can be an important amount. Insulin dosing probably accounts for the problems in March; there had been a readjustment of his dosing and that was associated with hypos. Understanding numbers and decimal points is quite important. There has to be accuracy of carb counting. The more glucose that is in food, the more insulin you are likely to require. He would have needed one unit of insulin to 15 gms of carbohydrate. You have to be a bit circumspect with pens since the lowest you can give is 0.5 units. A parent dealing with food intake would have to use their judgment because the increments in a pen system are not that specific'.* He went on to say that he did not think that 'carb counting' could explain the events on 24th and 28th July.

ii) In cross examination by Mr Goodwin QC, Professor Hindmarsh said more. His evidence included:

- '*The effect of giving insulin later than 15 or 20 minutes before a meal can be to cause recurrent hypos and the problem is compounded if the child does not eat all of the food that he is expected to eat. You could mitigate that if you wanted to wait until the child has eaten what he is to eat but then you run the risk of hypo due to the mismatch.*

- *You can get stacking of correction doses that precipitate a hypo. Stacking is a reasonable bullet point to add to the list of factors that can cause a hypo.*

- *There is a mechanical issue whereby a 5% margin of error can arise in the use of a pen – that can be an important amount for a child when for instance we get down to 0.5mmol/l.*

- *The effect on blood glucose levels of exercise is of potential significance. During and after exercise there is a repletion of energy stores in muscle and so the body takes up glucose. You would therefore need to give less insulin – it can require anything between 2-6 hours after exercise for muscle to replenish itself from energy stores.*

- *Intercurrent illnesses. That is common illnesses colds etc. They can have a marked impact on insulin responses. A quick rule of thumb is that illnesses that involve high temperatures – respiratory etc. they tend to raise glucose. The gastro intestinal illnesses and vomiting tend to be associated with a low blood glucose levels and so you need to adjust insulin downwards.*

- *The March admission was precipitated by a UTI and a readjustment of the insulin dosing – that would be appropriate since a UTI would be a temperature based illness and the dose appears to be higher than required. He was initially prescribed the wrong antibiotic which needed to be switched; that might have put back the resolution of the UTI, also.*

- *Heat and the climate is of direct relevance to management of diabetes. Higher temperatures would allow better absorption of insulin from the injection site due to increased blood flow; that can increase the risk of hypoglycaemia. Conversely, dehydration or lack of exercise in the heat may lead to increased blood sugar levels. Therefore, there is also the risk of high blood glucose levels. High summer temperatures can make diabetes harder to control. Once 25C is reached, we would suggest lowering the insulin dose otherwise you might go too low.*

- *Emotions can also affect blood glucose levels. When the body produces a lot of adrenaline, it can bring up blood glucose. Usually, this has a very short term effect and usually settles down. In a more chronic stress environment, where cortisol levels may be elevated, it will be necessary to readjust insulin levels. Cortisol is 'pretty anti insulin' and blood glucose levels may rise*'.

89. Nurse T also gave evidence about the effects of exercise and emotions on blood glucose levels. She said: '*If you're feeling stressed, your body releases stress hormones like cortisol and adrenaline. This should give you an energy boost for a 'fight or flight' response. But the hormones actually make it harder for insulin to work properly – this is known as insulin resistance'*.

90. **Nursing errors** - Professor Hindmarsh was also referred to errors that are apparent from the nursing records. These included: a) on 21st August 2021 [I3539] – Lantus was given instead of Novorapid; b) I1788 where there is a nursing note for 15th March 2021 which suggests that an incorrect 'pump infusion' rate may have been set; c) I2406, there was a delay because no Novorapid had been prescribed and, as a result, AB was off pump for 45 minutes on 4th May 2021; d) I4343 - On 2nd July 2021 it appears that the target rate was not changed to 8 the previous day, as it should have been. In their closing speech, Mr Goodwin QC and Ms Barrett list ten 'iatrogenic issues' which they

draw, with typical skill, from the papers; they include the four that I have mentioned and do not 'purport to be complete' (§32 (a) to(j)).

91. Mr Goodwin QC asked Professor Hindmarsh: '*What does the court do about unrecorded errors*?' Professor Hindmarsh said: '*[what] you may have to realise is that the admission of children for diabetes is fairly rare and you would need to assure yourselves that the general nursing staff on the ward and, perhaps the medical staffing on the ward, were able to deal with children with diabetes. The expertise may not be there. I would like to think that we have become good at managing this and so the experience that this might occur on a ward where there are mistakes is less than it was 20 years ago. Introducing the technology of the pump means that there is a different game to injections. You have to know your way around the pump and I would hazard a guess that it would not necessarily be the case for all of the staff – for instance the error about the Lantus on 21st August 2021.*'

92. I accept that this point requires careful recognition and is part of the complex factual survey that I have to apply to this case both when engaging in the micro-analysis of specific events but also as part of the macro-analysis or the necessary overview (Re T (Children) [2004] EWCA Civ 558). It is directly relevant to the issue of timing on 24th July 2021 (and the different timings that emanate from the evidence of Nurse D) and also to the issue of whether there was cannula failure on 28th July 2021. I treat these as serious and important points in this case. As I also stated in closing speeches, that which may appear initially and inherently improbable may, on proper enquiry, be demonstrated to have occurred (I gave the unpleasant example of a plane crash at East Midlands airport).

93. Specifically in relation to cannulas, Professor Hindmarsh said that the cannula, by which insulin is infused, may malfunction. There are two sorts of cannulas – one that is associated with pump use and the other that is used for other insulin administration. The cannula may not flush properly, may leak, may tissue or may malfunction in other ways. That can affect the administration of insulin at the point of entry. Tissuing means that the cannula works its way out of its seat; the fluid still runs in to the subcutaneous tissue and that can build up and can create lumps where the fluid, which could be insulin, has collected. Lumps may or may not be visible. The risks of extravasation (leakage of fluid from a vein into surrounding tissue) are particularly worrying. For the insulin infusion system to alarm there has to be a reasonable amount of back pressure; if the system leaks, that back pressure may not be present.

94. **The mother's access to insulin and opportunity to administer it on 24th and 28th July** – In my opinion, there can be no doubt that the mother would have had access to insulin on 24th and 28th July, if she had chosen to. This was before the period of enhanced supervision. Of course, she was not searched when she came into hospital. From time to time, she left hospital to go home. At home, there were reserves of insulin. All that is commonplace as is the recognition that the mere fact that she would have had access to insulin does not mean that she used it in the manner alleged. I will cover the point now, however.

95. Nurse S said: '*Depending on the supplies in the hospital, we would normally give a spare pen for short and long term insulin. In the event that we did not have sufficient supplies it would be added to the GP prescription so that the mother always had a*

spare pen. She would also have additional cartridges for short or long-acting insulin – there would be five cartridges in each box – she would have a box of each. When AB began on a new insulin regime, I do not think that the old cartridges were brought back. If there was a change we would not necessarily expect the parent to bring the insulin back in but take it to a pharmacy'.

96. I note that, in her police interview at SB-H47, the mother said: *[Q: So whenever you've been in the hospital at any point---]A. Yeah, they take your insulin pens to put in their storage. And then obviously they bring it at mealtimes. And either – obviously before I was allowed to do his insulin. Obviously, and then it stopped…But someone was always there to watch, and then the pen would go straight back to them. [Q. And then back to their storage] A. Yeah. [Q. So were you – could you take insulin in at any time then or, like, did they search your bags for insulin or things like that? A. No. I did offer for them to search my bags. [Q: So whenever you've been in the hospital at any point] A. Yeah, they take your insulin pens.'*

97. As to the mother's access to insulin, she said at C201:

- '*In terms of the types of recombinant human insulins referred to in the German report (Actrapid, Humulin S, Humulin I, Insulatard) as far as I can recall, we did not have a vial of Actrapid at home over the relevant period and the inventory of insulin handed back by my dad to the hospital on 24th August 2021 doesn't include Actrapid [I3976]. AB had never been prescribed Humulin I, so I did not have access to that type of insulin. He had been on Insulatard (long-acting insulin) and we did have a store of that at home which is reflected on the inventory of insulins handed back to the hospital on 24th August 2021 [I3976]. Whilst writing this statement, I have reminded myself that to use Insulatard successfully, you would have to roll the cartridge back and forth vigorously at least 10 times before it could be used, as it was a cloudy insulin and wouldn't work properly without being mixed thoroughly. I remember that Insulatard took quite a lot of effort to use correctly and I remember being anxious about not mixing it properly whilst at home.*

- *We did have the fourth type of recombinant human insulin that the German report indicated might have been in AB's blood sample, Humulin S, at home, namely cartridges and a vial (described as "maybe full" on the inventory [I3977]). Humulin S could be given either via a pen or a syringe and needle. I had been told by the hospital staff previously that Humulin S is an old-fashioned type of insulin and requires a much thicker pen to inject the insulin. The type of pen required is unusual and not readily available; the hospital team had spent some time trying to find me a pen and said we were lucky that they had managed to find one. I was given one Humulin S pen to take home by the hospital and gave that one pen in my possession back to the hospital on 22nd July 2021 as per the hospital protocol. If the type of insulin identified in AB's blood on 28th July 2021 could be narrowed down to Humulin S, then it would have been impossible for me to have been in a position where I could have injected it using the pen. Humulin S cartridges only fit in the Humulin S pen and as explained, I did not have one of those in my possession. I accept however, that I could have injected Humulin S by drawing up Humulin S from a vial using a syringe and needle. However, the difference between using a pen and a syringe and needle is that the latter was much more painful for AB and he hated being injected with a needle. You would have to count to ten with him to prepare him*

properly; if I had tried to inject him discretely and not given him any warning, he would have shouted out. Needles also left visible red needle-prick marks, whereas a pen didn't.'

98. However, at C205 the mother also says: *'After the review strategy meeting on 24th August 2021, AB was discharged home. The strategy meeting was held at 11am [I3471]. I was at the hospital during this period, with him under supervision. One of the recommendations made at that meeting was for any remaining insulin at home to be brought back into hospital. My dad brought to hospital a carrier bag of insulin at around 2:20pm and an inventory of what he handed in was written by paediatric diabetes specialist Nurse G [I3976]. The timing of this is relevant as I had not had the opportunity to go home and "syphon off" some of the insulin we had at home into a hiding place. AB was discharged from hospital with only certain prescribed insulins [I3544],Novorapid and Lantus as described on the discharge summary sheet [I3969].'*

99. On 24th August 2021, the social work team manager made an unannounced visit to the mother's home; a large amount of insulin was found [I4045]. That entry reads: '*Post strategy meeting social worker made unannounced visit to AB's home (maternal grandparents home). She found a large amount of insulin. She asked Maternal Grandma to take this to the hospital when they collect AB. Discussed with safeguarding team that this must be signed in when reaches hospital as may be needed as forensic chain of evidence if criminal proceedings occur. Insulin given to Caterpillar sister SH. Collected by PDSN Nurse G. Inventory signed and insulin locked in PDSN filing drawer. Signed by PDSN Nurse G and witnessed by Dr B*'.

100. The inventory from 24th August 2021 at I3976 includes: '*i) Humulin S – 2 sealed boxes x 5 cartridges each (expires 03/22), 1 cartridge in 3rd box (exp not known), 1 part vial (maybe full – Exp 02/23; Levemir: 1 sealed box x5 (exp 12/21), 3 cartridges (exp 5/22); Novorapid: 1 full flexpen (exp 10/22), 1 part used plunger at 250 units approx. (ex 10/22); insulatard: 1 box – 5 cartridges (exp 4/23), 3 cartridges in separate box (exp 11/22)*'.

101. Of course, 24th August is a month after the events of 24th and 28th July but it shows the amount of insulin that was typically kept at the home, in my view. Further, it is obvious that, if the mother did administer insulin covertly on either date: a) the insulin must have come from somewhere and b) any *untruthful* denial would be associated with a denial that she had insulin in her possession.

102. As to opportunity:

   i) Dr B and Nurse S said that insulin can be administered very quickly, particularly if injection is by a pen. It would take a matter of seconds.

   ii) Dr G said that '*it would not take minutes to administer insulin…it would be quick'*.

   iii) Staff Nurse H described the cubicle where AB was in July – there is a door with a window. Then there would be AB's bed. The mother would sit and sleep on the other side of the bed.

103. Plainly, if the mother did deliver insulin covertly and wrongly, she would have had the opportunity to do so. That is even though nursing staff said that they did not see the mother behaving suspiciously.

104. **The conclusions of the treating consultant, Dr G** – Dr G gave evidence of high quality as the treating consultant with responsibility for AB's care. I will refer to his evidence further when considering specific dates within the chronology. However, in his statement, he expressed the following conclusions [SB-C55]:

- AB had a very unusual and perplexing presentation where he continued to show fluctuations in his blood glucose levels leading to recurrent hospital admissions. AB spent a significant amount of time between March and August 2021 in the hospital that impacted his ability to attend school. AB continued to have dangerously low blood glucose levels despite being on extremely small doses of insulin or no insulin. Mild hypoglycaemia is common in insulin-treated children with diabetes and is managed simply at home with oral glucose. AB's episodes of hypoglycaemia unusually required multiple treatments with oral glucose, a glucagon injection (glucagon is a hormone that counters the effect of insulin and raises blood glucose levels) and repeated intravenous injections of glucose over several hours in order to correct and maintain a safe blood glucose (more than 4 mmol/L). The severe hypoglycaemic episodes continued despite changes in the types of insulin.

- When AB was receiving insulin via an insulin pump, he experienced persistent raised blood glucose levels along with raised blood ketones level despite no fault being identified in his insulin pump. It is very difficult to explain the persistently raised blood glucose level that AB had during the time when he was on the insulin pump.

- When AB was switched over to subcutaneous insulin he suffered recurrent episodes of severe hypoglycaemia despite being on very small doses of subcutaneous insulin or no insulin. The medical investigations to seek an alternative explanation for the recurrent severe hypoglycaemia have been negative.

- Investigations at the time of severe hypoglycaemia confirmed inappropriate high insulin levels suggesting exogenous insulin administration. When AB was placed in enhanced supervision, the episodes of severe hypoglycaemia did not recur and AB has not had any significant episodes of ongoing hypoglycaemia since being discharged from the hospital and being under the care of his father and extended family members.

105. **The conclusions expressed in Professor Hindmarsh's report** – At E72 Professor Hindmarsh says that he concludes that:

a) AB has diabetes mellitus and is insulin dependent as evidenced by the high blood glucose concentrations measured at various times at and from diagnosis, symptoms of polyuria and polydipsia and the presence of ketone bodies when unwell with hyperglycaemia during insulin pump therapy in April/May 2021.

b) Hypoglycaemic episodes became an ongoing problem from March 2021. Evaluation of the cause(s) for the hypoglycaemic episodes was hampered by the poor critical

sample collection with very few sample collections containing all samples required. The critical samples obtained in March 2021 indicated ongoing insulin action but because of the insulin assay used it was not possible to determine whether insulin was present in excess or the type of insulin present.

c) The hypoglycaemia episode at 01.30 on the 24th July 2021 occurred some 39 minutes after the insulin infusion was switched off (if it was switched off at 01.00). By considering the pharmacology of insulin the hypoglycaemia is not explicable by the insulin infusion and the duration of action of insulin that would result but would be consistent with the ongoing effect of non-prescribed insulin administration.

d) Further hypoglycaemic episodes took place on the evenings of 25th, 26th and 27th July 2021 and occurred between 21.00 to 23.40 and appeared in time to be related to the switch off at 20.00 of the intravenous insulin infusion which was done to prevent nocturnal hypoglycaemia. There are no accompanying hypoglycaemic screen measures so it is not possible to comment further. On the evening of the 28th July 2021 the intravenous insulin infusion was stopped at 20.38. By 22.00 the blood glucose had fallen to 1.4 mmol/l. The hypoglycaemia screen showed a plasma insulin concentration of 160 mU/l. This value is higher than that estimated from the infusion rate and in addition it would be expected that the plasma insulin concentration would be below 2 mU/l 28 minutes after the insulin infusion was switched off even if an intravenous bolus (flush) of insulin was inadvertently given. Both these observations imply that additional exogenous insulin was present throughout this period and as this was not prescribed, must have been administered by person or persons unknown.

e) The hypoglycaemia episode on the 2nd August 2021 at 20.00 was associated with a plasma insulin of 4.3 mU/l which suggests either on-going insulin secretion by the beta cells (less likely as endogenous secretion should be switched off, unfortunately C-peptide was not measured) or exogenous human insulin administration but not as Novorapid as this cannot be measured in the assay used in [this local area].

f) The data from the 24th and the 28th July 2021 provides solid information to implicate unauthorised additional exogenous insulin administration. The data on those dates excludes the other causes that I have considered in Section 6. The episode of August 2nd is supportive but not conclusive. The remaining episodes, although concerning, lack sound biochemical evidence to support unauthorised additional exogenous insulin administration by person or persons unknown.

106. **Some other key aspects of Professor Hindmarsh's evidence**:

i) In evidence he adhered to the view that he had expressed at E72 that evaluation of the cause for the hypoglycaemic episodes was hampered by poor critical sample collection. He said that the 'assays' that were carried out in [this area] are biochemically incomplete. He said: '*I have avoided drawing sweeping inferences because in the absence of hard data it is unsafe to do so. There are episodes of hypoglycaemia. Apart from the specific dates that I have alluded to, it could be that the hypos are the sort of things that happen on a day to day treatment of diabetes.'*

ii) He was asked at the outset of Mr Goodwin's cross examination about his overall opinion and he said: '*I have been very cautious about reaching adverse conclusions to the mother without hard data*.' He was referred to his conclusions at E73 (para e) and said: '*Other than the episodes that I have quoted the others lack sound biochemical evidence to support unauthorised exogenous administration'.* The episodes that he was referring to in his report were those that occurred on 16th March, 24th July, 28th July and 2nd August 2021.

iii) In relation to 2nd August 2021, Professor Hindmarsh said: '*The only problems about the measurement on 2nd August is that he was receiving Novorapid and that would not be measurable in the [local area] assay.*' He did not consider that the evidence of covert administration on this date was reliable. Given the 'variables' and on the basis of what he had read and heard, he said in cross examination that '*aside from those three dates of 16th March, 24th July and 28th July, I cannot say that there is evidence of covert insulin administration. All I can say is that there were hypos but can't say the cause.'* The Local Authority does not seek a finding in relation to 2nd August.

iv) In relation to 16th March 2021, he said that, due to the assay used, it was not possible to conclude whether unauthorised insulin was administered. He also said this in reply to questions from Mr Goodwin QC: '*As to 16th March, as a starting point, the plasma insulin readings that we have for the 16th do not demonstrate the presence of covertly administered insulin. I can't say anything more than that – the insulin used was Novorapid that cannot be identified in the [local area] assay. There was insulin action, but I cannot say that there was insulin. There is something around but I can't say more than that. There is nothing in the plasma reading…there is only evidence of insulin action on that day. That's as far as it goes. We don't have a lot of information about this date. My bottom line here is that I don't think that there is enough to advise the court that there is evidence of covert administration on that date. There is insulin around but that may be appropriate. It is really difficult to know what is there because the way that the assay was working. We are so close to the minimum detection rate of the assay – a reading of 1.7 could be 0 - that we cannot rely on it to say that there was insulin around at all…there are no markers at all. We just do not know whether there was Novorapid around that day'.* Following his evidence, the Local Authority altered its schedule of allegations and does not pursue an allegation of covert and wrongful administration of insulin on that day.

v) Overall, he said in chief, '*I remain of the view that there was unauthorised administration of insulin on 24th and 28th July'.* By the end of cross examination, his opinion concerning 24th July had been qualified. He gave detailed evidence about essential timings that I will set out later. Although he adhered to his opinion about the 28th, he did so in terms that require very careful examination later in this judgment.

vi) Beyond those two episodes in July, he said: '*The remaining episodes lack evidence of unauthorised administration.'*

vii) It is worth mentioning at this stage that we need to be careful when switching between point of care (finger prick blood glucose meters and glucose monitors such as the Libre) and laboratory glucose measurements. Finger prick point of care blood glucose testing is of whole blood whereas the laboratory measures glucose in the plasma component of blood. Plasma has a higher water content than whole blood, so there is more dissolved glucose in plasma compared with whole blood, and readings are 11 to 15 percent higher. New blood glucose meters now report blood glucose as "plasma glucose" to conform with lab readings by adjusting for the water content. Further, there can be discrepancies between meters depending what system they use to measure glucose and home meters need to be calibrated from time to time to ensure accuracy [E53].

viii) Hyperinsulinemia simply means high concentrations of insulin in the blood. Insulin is the only hormone that can reduce blood glucose concentrations. Endogenous insulin secretion is switched off when the blood glucose concentration reaches 4.4 mmol/l and the counter-regulatory hormones, glucagon, adrenaline, cortisol, and growth hormone, which raise blood glucose, are secreted when the blood glucose reaches 3.8, 3.8, 3.7 and 3.2 mmol/l respectively. Of these, glucagon and adrenaline are the first line of defence acting within minutes whereas growth hormone and cortisol act over several hours. In Type 1 diabetes mellitus there is no insulin produced by the pancreas so this cannot be switched off. Glucagon secretion is also compromised in this situation because of the loss of insulin production from the beta cells. This leaves adrenaline as the first line along with growth hormone and cortisol. The thresholds for release are also reduced in Type 1 diabetes mellitus especially where there is recurrent hypoglycaemia (Table 3) (8). Not only are the thresholds lower but the magnitude of the counter-regulatory response is reduced [E62].

ix) Human insulin, made in the beta cells of the pancreas, starts life as a large molecule known as proinsulin. The A and B chains are linked together by disulphide bridges and the C-Peptide component links the A and B chains initially. The C-Peptide is then cleaved from the proinsulin molecule and is secreted in equimolar concentrations with the insulin molecule. Insulin is cleared rapidly, predominantly by the liver, and has a half-life in the circulation of 4 minutes. Half-life is the time taken for a 50% reduction in the concentration or amount of a drug or a hormone in the blood to take place. C-Peptide is cleared by the kidney and has a longer half-life of some 20 to 30 minutes. This means that, in the circulation at any time, the circulating concentration of C-Peptide is greater than insulin by a factor of 5 to 10. The advantage of the C-Peptide measurement is that it is indicative of insulin secretion from the beta cells of the pancreas. Biosynthetic human insulins, made by recombinant DNA technology, only contain the A and B chain. Some assays that measure insulin in the circulation can detect biosynthetic human insulin because there is cross-reactivity in the actual measurement system (the Mercodia assay in Guildford). Some assay systems cannot do this, as there is no actual cross-reactivity (Roche assay in [local area]). The different performance of assays is helpful, therefore, because it allows differentiation to be made between exogenous and endogenous insulin production. In a situation of endogenous insulin production, both C-Peptide and insulin will be measurable,

whereas if only exogenous insulin is present, C-Peptide will not be detectable because endogenous insulin production is switched off and insulin measured depending on the assay used. In Type 1 diabetes mellitus C-Peptide is less helpful other than describing whether there is still some beta cell function as beta cells are destroyed by the disease process so we would expect C-Peptide to gradually become unmeasurable with time.

x) Hypoglycaemia in diabetes is typically the result of the interplay of relative or absolute therapeutic insulin excess and compromised defences against falling plasma glucose concentrations. The latter have been outlined already but consist of reduced/absent glucagon response to hypoglycaemia along with an attenuated adrenaline response along with absent/reduced clinical responses to hypoglycaemia. This is also known as hypoglycaemia-associated autonomic failure. The pivotal finding is that a 2-hour episode of hypoglycaemia in the afternoon can reduce the hypoglycaemic responses to hypoglycaemia the following morning in non-diabetic individuals and in those with Type 1 diabetes mellitus. The observations have been extended to include reduced responses to hypoglycaemia during sleep as well as the impact of antecedent exercise which reduces the adrenaline response. Figure 3 summarises broader risk factors for hypoglycaemia in Type 1 diabetes mellitus.

xi) We know from earlier studies that kidney function overall was normal, and urea and creatinine were normal in the various tests undertaken in 2021 which excludes chronic kidney disease as a cause for altered insulin clearance [E232].

107. **AB's education** – The headteacher filed two statements in these proceedings (C33 and C38) and gave oral evidence. Her second statement is drafted as a repeat of her first, with updates. Care has to be taken in relation to her statements, in my opinion. First, the dates of the statements have to be recollected when considering what she says. Her first statement is dated 28th September 2021 and the second is dated 3rd November 2021. They are not contemporary statements. Second, because there are passages in them where the specific (i.e. events relating to specific dates) might be read as purporting to make a general statement. Third, because there have been difficulties in relation to the management of AB's diabetic management by the school, difficulties that continue to date (see the father's evidence).

108. AB joined the reception class at the school on 2nd September 2020 (and thus his education was affected by lockdown). His attendance for 2019-20 (reception class) was 81.8% [C34]. For Year 1 (2020-21) it was 38.5%. During the January 2021 lockdown he attended 32 out of 39 sessions. His attendance since 9th September 2021 to 2nd November 2021 was 84.74%.

109. In Year 1 his attainment was well below age-related expectations and it has remained at that level in Year 2 [C34 and C39]. At C34 the headteacher gives a number of examples of how the mother was receptive to updates about AB's behaviour. She says that AB always arrived at school well dressed, in the correct uniform and clean. He has difficulty with concentration and listening [C35]. There were two days in November 2020 (19th and 30th – C35) when the mother did not receive well enquiries by the school about AB's diet but, in oral evidence, the headteacher said that the mother's reaction was usually fine.

110. She said that he '*will say that he does not need to learn, everything in his life is secondary to his diabetes*' [C36]. That gives something of a window into how the level of hospitalisations was affecting AB as at the time of her statements. That is hardly surprising.

111. At C37 she describes one of the difficulties as being '*managing AB's diet and ensuring that he has the correct amount of food groups rather than crisps, McDonalds and carbohydrate counting confusion – mixed messages from home as to the correct amount.*' As things developed, the headteacher said, the mother was helpful with this. She recalls that '*the amount of macaroni pasta that we are asked to give seemed excessive on one day as the plate seemed bigger than an adult would have [C57]. We checked with the mother. She had taken the measurement from a book that she had read'*. In oral evidence the headteacher said that the mother did not appear to understand how to calculate the carb levels. '*This was way in excess of what AB might eat. Despite the efforts of the school staff, the mother did not then appear to 'get it''* [C57]. That, I think, is a helpful insight into the sort of difficulty that the mother was having with carb counting - a difficulty which, on the father's evidence, the school appears to be having currently.

112. At the end of the case I asked counsel to confirm to me my understanding that, when AB was in the care of the mother, she would supply his lunch and primary food for school. I was told that was so.

113. The headteacher said that, looking at June dates, there were quite a few events in June 2021 and it was worrying that things seemed so out of control in relation to his diabetes.

114. At C40 she says that, since living with the father, AB arrives at school with all the necessary resources for his diabetes and for the school day and there is good communication between the school and his home. In oral evidence, the headteacher said that his attendance for the academic year beginning the 6th September 2021 to 8th July 2022 is 88.2%. Since living with the father, AB has maintained a steady attendance figure and he has become an involved member of his class. The father and his partner have been very supportive and have attended parents' evenings. AB has enjoyed being a full member of the class. He now has a better attitude to learning.

115. Given the amount of time that AB was spending in hospital in 2021 when living with the mother, the focus on his diabetes and the fact that his diabetes was often not being managed adequately, it is not remotely surprising that his education and socialisation suffered significantly.

116. **Chronology.** I now wish to turn to the chronology and deal with the evidence that I have heard in more detail.

117. AB was born. The mother was aged 19 at the time. He had a left clavicular fracture at birth [SB-C48]. In her statement at C160 the mother gives a summary of her understanding of AB's health difficulties prior to the diagnosis of diabetes. She says that, as a new born baby, he suffered from vesico-ureteric reflux and then UTIs in the first year of his life. She says: '*he had had such severe sepsis that part of his kidneys*

were damaged leaving scarring. His kidneys do not function entirely normally as a result; it is my understanding that one functions at 25% and the other at around 75%. He remains under the care of Professor C ...at TheChildren's Hospital. He had eczema quite badly, too…He had multiple ear infections…he also suffered from issues with croup…We also had issues with weaning AB as he wasn't interested in solids for a long time. He was diagnosed as being allergic to formula (cow's milk) at about 12 weeks…'

118. Professor Hindmarsh says at E51: '*On the 16th July 2015 AB presented unwell with urinary tract infection. Bilateral vesico-ureteric reflux was noted and subsequent assessment revealed 75% of function from the right kidney and 25% from the left. There was and has not been subsequently any evidence of chronic kidney disease that would alter insulin metabolism.'* Prior to the diagnosis of Type 1 diabetes in November 2020 there was no significant or relevant medical history in relation to diabetes [E51]. There is no recorded family history of diabetes mellitus [E51].

119. The assault that the mother suffered therefore occurred when AB was aged two. Medical records state that the mother had been off work due to trauma and was experiencing migraines which were thought to be stress-related [E196]. The medical records record that she was feeling low and tearful for some time and had received counselling [E196]. In November 2018, the mother's medical records show that she was brought into hospital by ambulance and was intoxicated with a Glasgow Coma Scale of 3. She was having 'self-resolving apnoeic episodes lasting one minute' [E196]. The records for March 2019 state that the mother was suffering from a low mood. She was said to be struggling with work and engaging in some self-harm and was put on a trial of sertraline [E196]. In July 2019 the mother underwent a termination of pregnancy; given everything that I know about the mother, I think it highly likely that would have been a very distressing event for the mother – also AB was then aged four.

120. On 12th November 2019 (or possibly the day before) the child's School spoke to the mother about their concerns about AB's lack of readiness to learn and his behaviour at school. It is stated that the mother was receptive to advice and followed this with a GP visit [C34, C49].

121. The mother says in her statement that AB's behaviour '*seemed to get worse in the period of time leading up to his diagnosis of T1 diabetes in November 2020. He was having outbursts and hitting other children. I took him to the GP in September 2020 given how out of character he was acting and how worried both I and the school were. These extreme behaviours seemed to resolve themselves soon after he was diagnosed with diabetes.'*

122. There is a succession of entries about AB's behaviour at school that shows this. These are some of them:

    i) 17th January 2020 – AB attended school and was unsettled, hyperactive, complaining of being hungry and struggling to control himself in child led activities. He struggled to concentrate and talked about killing, fighting and zombies. He kicked and hurt other children. He told a teacher to 'fuck off' [C50].

ii) 20th January 2020 – The school reported that AB was kicking other children and spat at the child beside him. There was a discussion between an unidentified teacher and the mother at school about AB's behaviour. The mother informed the school that AB was struggling to eat healthy foods.

iii) 24th January 2020 – The mother spoke to a teacher at school about AB's behaviour [C51]. She had overheard other parents talking about him and felt terrible. She has not witnessed the sort of behaviour that was being mentioned at school when AB was at home. She said that AB's sleep is extremely poor, and he often sleeps for only three hours. Food was also an issue.

iv) 27th January 2020 – there is a report from the school [C52] that AB pulled another child by the coat and slapped her on the face. He also told another child "your dad is going to be killed by the police".

v) 12th February 2020 - the mother reported to the school her concerns about AB's behaviour at home [C52]. She said that he had angry outbursts, threatened to hurt the cat, had meltdowns, hurt others, lied, engaged in impulsive and destructive behaviours and smeared faeces at soft play on one occasion. The SENCO advised paediatric referral.

vi) [I have omitted some entries]

vii) 9th September 2020 - The school CPOMS (Child Protection Online Management System) record for this day includes: '*AB spent most of today near me after yesterday's incidents. Whenever he wasn't being closely supervised children were complaining that he was hurting them or spoiling their games. Sometimes the children are winding AB up and encouraging him to chase them but there are other times when his behaviour has been unprovoked. During lunchtime he punched J, who punched him back. Later in the afternoon he scribbled all over one of the girl's pictures with no reason. At the end of the day I spoke to Mum, she said that she was disappointed that AB had been refused behavioural support. Mum said that AB needed boundaries but she feels that she is doing it all on her own. I explained that he has rules and boundaries at school at that we will support her.'*

123. The above accounts give some idea, I hope, of the demands that the mother faced in her care of AB even before the diagnosis of diabetes was made. They added another dimension of emotional difficulty to those that arose from the mother's own direct experiences. For instance: i) On 4th March 2020 she attended her GP suffering from depression; it is recorded that *she had 'not been able to resolve past trauma, was tired of pretending that she was alright, could appear fine but went home and cried'*. She was prescribed paroxetine [E196]; ii) On 1st May 2020 a letter was written by a therapist reporting that the mother had symptoms of PTSD, anxiety and depression. She was engaging in some self-harm and was recommended for CBT [E196].

124. On 5th November 2020, the mother had a telephone consultation with the GP, Dr D [I1213] She reported that AB was excessively thirsty, was drinking about a pint every 1½ hours and was waking in the night to drink water. A urine dip revealed elevated

glucose and ketones. AB was admitted to the Hospital with a short history of polyuria (increased urination) and polydipsia (increased fluid intake) [E51 and I1132]. He remained in the hospital until the afternoon of 10th November 2020. His Paediatric Specialist Nurse was Nurse T from the time of this diagnosis until June 2021 (save for six weeks in March and April) when she handed over to Nurse S.

125. **6th November 2020** – The Diasend readings start on this day – DM – I2. I would ask anyone reading this judgment to flick through the charts for the period between November 2020 and the end of February 2021. There are only a few hypos (red). There are many 'greens' (normal) and some 'oranges' (hypers). The picture is nothing like as dramatic as it became in March, June and July (to which I turn later).

126. The mother is recorded, on that day, to be feeling 'overwhelmed' and anxious about AB spending time with the father and his parents who had 'refused to have training'; if that was a problem then it is not a continuing one [I1151]. At I1152 there is an entry by Dr A, the psychologist, who wrote '*Roller-coaster of emotions at beginning and reinforced with Mum the importance of support network (mum let me know that she has a close and supportive family). Discussed behaviour management of AB e.g. use of rewards and praise. Mum using very helpful strategies already, e.g. not delaying procedures and using plentiful approval to helping AB understand the need for injections and blood tests'.* Later that day there is an entry [I1152 at 12.10 p.m.] which recorded that '*Insulin injection administered demonstrated to mum. Mum and AB would both like to practise using fake skin today. AB was brilliant with injection'.*

127. Dr A wrote as follows in a report for a case conference on 14th September 2021 about the twenty sessions that she held with the mother and AB between 6th November 2020 and 26th August 2021:

i) AB adjusted well to the diagnosis of diabetes. The mother demonstrated some helpful parenting approaches in relation to his diabetes.

ii) Overall, Dr A observed a warm and close relationship between the mother and AB. The mother attended all appointments with Dr A.

iii) The initial difficulties about managing the injection of insulin resolved quickly.

iv) AB has been able to voice distress about hospital admissions. He is able to talk about his thoughts and admissions well.

v) '*In terms of hospital admissions, mum has voiced concerns around the emotional impact on AB of long hospital stays, concerns around missed school.*'

vi) The mother had received support around her own experience of repeated hospital admissions '*and…frustrations around the length of stays and lack of progress in management of blood glucose levels at times, changes to care and recent experience of distress around observation…*'

128. That impression of the mother, as someone who did not want AB to experience long hospital stays, was co-operative with Dr A and was closely and lovingly attached to AB, is important when considering the case that is being presented against this mother.

129. A dietician, AW, attended the mother and AB at mid-day to begin their education in relation to diabetes; the advice that was given can be seen at I1153. The education continued during AB's admission [e.g. I1154]. There is no suggestion that the mother did not co-operate with the dietician fully. It was the dietician who dealt with 'carb counting'.

130. At SB-C12, nurse G says: '*I first met AB and the Mother with AB's grandmother on the afternoon of 6 November 2020 to continue with the structured education teaching plan that we use for newly diagnosed children and families. As part of the training session I used scenarios to check knowledge and understanding of the subjects covered. We discussed 'what is diabetes', the need for insulin and good blood glucose control. [We discussed] Insulin injections (storage and action of insulin), insulin sights and rotation of sights, blood glucose checks (demonstration of the equipment and discussed blood glucose target range), hypoglycaemia (signs and symptoms, treatment, use of glucogel). [We had a] brief discussion regarding hyperglycaemia - when to check for ketones. Mum appeared confident to do the blood glucose checks and I encouraged her to practise giving the insulin injection over the weekend*.' In oral evidence nurse G said that, if she were explaining how to check blood glucose levels she would then ask questions and give the mother demonstration equipment upon which to practice.

131. On 7th November 2020, the mother was observed to administer insulin with a good technique [I1156]. There was also an entry at I1162 that the father was due on the ward to familiarise himself with injections/ meal times. On 8th November 2020, AB is recorded [I1170] as having a hypo at 10:58 after breakfast. The records state [I1170] that '*mum really good at the testing and knowing when he's symptomatic…Mum very on it with spotting and checking sugars/ giving glucose.'*

132. By 9th November 2020, the mother is recorded in the nursing notes as feeling 'happier and more confident with administering insulin and adjusting to a big lifestyle change [I1176]. She was showing a good knowledge of hypos.

133. On 11th November 2020, Nurse T made a home visit following AB's discharge from hospital on 10th November 2020. At SB-C16 she says that she reviewed the education of the mother and AB; she says that the mother 'answered all questions which were appropriate and demonstrated her diabetes knowledge.' Nurse T then went to the child's school to identify the support that AB would need there. She provided diabetes education and support for the staff involved in AB's care.

134. An individual health care plan was then completed and sent to the mother and to the school to check before it was finalised [SB-C16 and I1340]. Nurse T said that the mother was 'quite happy' about the plan and what we had put together. Nurse T said that the mother said that she had read it and understood it. The mother approved it on the 11th November 2020. At times it is worded in terms that are more suited to advice given to the school but that does not detract from its clear meaning. It is an important

document within these proceedings, not least because it says what the mother should do if AB became unconscious.

135. It includes:

i) Below 4mmols school carers must follow the hypoglycaemia advice flowchart. Above 13.9 school carers must follow the hyperglycaemia advice flowchart.

ii) Hypoglycaemia (or a hypo) is when the blood glucose level drops too low. These episodes can happen rapidly and, if left untreated, can lead to unconsciousness and seizures. [Then in red font:] The treatment of hypoglycaemia should be immediate to prevent the episode deteriorating; carers must refer to/follow the 'hypo flowchart. DO NOT leave the young person alone or expect them to travel around the premises when 'hypo'. Treatment requires fast acting sugar to be given usually in the form of glucose tablets or a sugary drink. [Then in black font:] Do not prevent a young person from eating or drinking in class when they are treating a hypo. Episodes of hypoglycaemia may cause child/young person to act out of character and can affect cognition and concentration even after treatment has been successful'.

iii) Hyperglycaemia (hyper) happens when blood glucose levels rise too high. This can be caused by too little insulin given for the amount of carbohydrate eaten, stress or illness. [In red:] When 'hyper' additional insulin may be needed; carers must refer to/follow the Hyper Flowchart. [In black:] It is also helpful for the young person to drink plenty of sugar-free fluids. They may need to visit the toilet more frequently, and should not be made to wait until timetabled breaks. Please do not draw attention to their need to use the toilet or prevent them from accessing the toilet. Being hyper affects cognition and concentration and may cause a young person to act out of character.

iv) [In a flow chart at the end headed 'treatment of hypoglycaemia]: 'I am unconscious or fitting…Give nothing by mouth. Place me in a recovery position. * Dial 999 and contact parents.'

136. The mother accepted that she knew that, if AB was unconscious, she should call an ambulance. I do not think that it needs a care plan to that effect but I accept that there is no doubt that the mother knew that is what she should do. The fact that she did not do so, on 13th June 2021 and delayed on 21st July is a matter that the guardian has emphasised as being of particular concern (I have deleted dates where I do not make findings) – '*the court therefore has clear evidence that on 13th June 2021 and 21st July 2021 the mother weas reporting that AB was at time going unconscious, collapsed, not breathing, blacked out, wouldn't respond and could not be roused…It is also clear that the mother did not call for an ambulance on these occasions (on the 21st July there was a significant delay in calling an ambulance of at least 1 hour) or tell the diabetes team when the events occurred.*'.

137. The plan involved attendance at a multi-disciplinary clinic every three months; Nurse T says that the mother and AB attended all of their clinic appointments [SB-C16]. She says that, at each clinic a blood test called the HbA1c (glycated haemoglobin) is done that measures the average blood glucose level over the last 8-10 weeks. The target

HbA1c is 48 mmol/l. The actual readings were: 04.02.2021 (61 mmol/l) and 20.05.2021 (84 mmol/l). The reading for February 2021 (slightly high but not much) is consistent with the evidence that up to the end of February 2021 the mother was managing AB's diabetic care (and, therefore, that the training had had an impact). Nurse T said that the slightly high reading of 61 does not help with the issues currently before the court. She said: 'there was a simple reason for the reading of 61 – he had been ill.'

138. On 19th November 2020, AB attended a review clinic with Nurse T and Dr G. At I1346 Nurse T wrote: '*I am glad that AB and his family have coped well with his new diagnosis so far. He is taking injections and the blood test well on board. …AB is growing well…the next appointment for AB will be in six weeks.'* In his statement, Dr G said: '*I reviewed him along with his mother in my clinic on the 19th November 2020. AB was settling with his new diagnosis and his mother was administering night time insulin (long acting) and meal time insulin (short acting) based on what he eats (carbohydrate counting), which is standard practice in diabetes care.'*

139. By 23rd November 2020 the emotional difficulties came back to the fore. The mother informed the school that '*the novelty had worn off and that AB was struggling emotionally with dealing with his diabetes. She said that AB's blood sugars had reached 30+ at the weekend'* [C57]. On 24th November 2020, Nurse T referred the mother and AB to the diabetes team psychology service for support as AB's behaviour had changed [SB-C17]. On 25th November 2020, the mother informed the school that she was going to book an appointment with the GP to test AB's urine as she thought that it looked wrong that morning. She said that AB was really struggling emotionally and had been crying a lot. AB is reported to have come into the school happily [C57]. Nurse T sent an email to the mother about AB's urine, in reply to an email from the mother [I1349]. Nurse T said: '*…bearing in mind that he has been acting differently and having accidents and wetting the bed at night, I think, if you are concerned, you should definitely get it checked by the GP. This could be a urine infection and is better checked than not.'* At school, AB punched one child and poked another in the eye. The CPOMS entry at C58 is '*he was very restless, rolling around under tables but kept his hands to himself*'.

140. I will now refer to two hospital admissions:

 i) On 7th December 2020, AB was admitted to hospital through the A&E department. He had a 48 hour history of fever with coryza (catarrhal inflammation) and a sore throat. He had been off his food the day before and his ketones were 'swinging' between 0.2 and 2.0 because of the intercurrence between the virus and food intake. He was discharged home with reassurance and a ketone strip prescription [I1366]. The Diasend material for that day [DM-I5] shows one red hypo reading of 3.8 and only one 'orange' hyper reading of 10.4. There are seven green or normal readings.

 ii) On 1st January 2021, AB was admitted overnight with a fever and a minor disturbance of blood glucose and high blood ketone levels, secondary to a viral infection. Nurse D cared for him on 2nd January 2021; her notes are at I1414. At I1368 it is stated in his discharge summary: '*[AB] was reluctant to eat initially, especially whilst febrile but was feeling much better and looked brighter prior to*

discharge. A long discussion was had with mum about managing his intake and insulin whilst unwell and she was given general advice about sick day rules as per The Children's Hospital guideline. Diabetic team to be made aware of admission – they will contact diabetic specialist nurses to liaise with family for further support after discharge.' He was discharged on 2nd January 2021 [I1638]. AB's Diasend readings can be seen at DM-I8. They record only one hypo on 1st and 2nd January (2.7 reading), a majority of green readings and some mild hypers (10.3 to 14.5).

141. At E66, Professor Hindmarsh says: *'Up until March 2021 there were two admissions with high temperatures, but I would not view these as abnormal.'* I agree, respectfully.

142. On 4th February 2021 Dr G carried out his clinical review with Nurse T. Dr G wrote at I1511: '*AB has been generally well in himself since the last clinic visit…AB's blood glucose is high post prandially after breakfast and I have suggested to increase insulin for his breakfast from 1 unit for 35g to 1 unit for 30g. His morning waking blood glucose is normal. It is likely that AB may need more insulin for evening time, but I have left it to be reviewed in a few weeks by the Diabetes Nurse Specialist. ...His next appointment will be in three months.'*

143. In his statement at SB-C48, Dr G said: '*AB was again [i.e. after 19th November] reviewed in my clinic 3 months later on the 4th February 2021. Adjustments were made to his insulin doses based on his blood sugar level which is a standard practice of care. AB's HbA1C (marker of average glucose levels for 2-3 months) had appropriately come down to 59 mmol/mol from 91 mmol/mol since the time of diagnosis. There were no concerns raised by any team members at this point. AB's mother was interested in AB having a flash glucose monitoring system (Freestyle Libre - a sensor device that measures glucose levels constantly) which was subsequently arranged by the diabetes nursing team. AB's blood tests at the time of diagnosis had shown the absence of diabetes antibodies (the presence of which is suggestive of type 1 diabetes whilst the absence does not exclude type I diabetes).'*

144. On 17th February 2021, the mother received training in the use of the LibreView monitor (see the glossary). It is a continuous blood glucose monitor. The readings began at about 16:30 hrs on 22nd February 2021 [DM-J895]. I would ask anyone reading this judgment to look at the charts up to 2nd March [DM-J898]. They show a relatively stable picture with very few hypos. The numbers in black font in square boxes [e.g. DM-J896 – 1.0] are the ketone readings. The charts show a typical rise in glucose levels after breakfast and lunch.

145. The mother appears to have viewed things differently. On 24th February 2021 the school records show that the mother sent an email to the school [C60] saying that she has '*really been struggling with AB. His blood sugar levels have been very high and he has really struggled to concentrate…I asked Mum if she was getting support from the diabetes nurse/team. She said that she was but that his levels were due to him being stressed due to school work…I told her to take things slowly with him for the next week and make sure he is healthy. When we get back to school, we will look at where AB is and work from there.'*

146. On 25th February 2021, the headteacher of the school spoke with the mother by video call. The note at C61 includes: '*when we did talk about school and AB's learning and behaviour Mum said it was all down to him being poorly. Mum kept telling me that AB's blood levels were high because he was stressed about the work. Mum showed me AB's monitor, he has had several high peaks in his blood sugars Tuesday and Wednesday with levels above 20. She said that his levels were caused by his school work. I asked what support she has from the diabetic nurse and team; she said that, unless she contacts them they don't call. She sends through his weekly readings. ….then she said that it doesn't matter about carbs really as 2 units of insulin would do it. I asked her what she meant and she said that he could eat anything and we could give him two units of insulin and he would be OK. I told her we would not make that decision at school. She said that it was fine because Mrs W would phone and she'd say that the two units would be okay. I asked how managing AB's diet was going. During our Zoom call AB was eating a large bag of crisps. Mum said it was fine, she thought they were doing well, I am concerned about the managing of AB's diabetes. I haven't seen his levels for a few months now but he wasn't having spikes like that at school. I don't know if we can or should contact the Diabetes nurse and ask how to manage AB.*'

147. In fact there was one reading above 20 (23rd February at 07:00 hrs, which would be after breakfast). When he was given an injection of insulin (the green syringe symbol on 24th February) he responded normally and his blood sugars went down.

148. On 2nd March 2021, the school recorded as follows at C61: '*Following AB coming into school today and levels are still very up and down at 8:15 a.m. Mum has confirmed no insulin given as the levels will drop by themselves. At 10 a.m. levels 12.5.*'

149. It is about this time that AB began suffering from the UTI. I accept that caused his blood glucose levels to climb considerably. The LibreView charts show this clearly – DM-J898. In his oral evidence Dr G said: '*if you have any sort of infection your blood sugars can run high at the time that the body is fighting the infection.*' Nurse T said: '*in early March the high levels were due to UTI. That would lead to AB being hyperglycaemic. But it also causes difficulties in managing insulin controls and leads to peaks and troughs as illness is not regular or constant*'. Professor Hindmarsh gave evidence to the same effect.

150. Nurse TG, a paediatric diabetes nurse specialist, wrote an email to the mother [I1153]. It included: '*thanks for sharing your concerns regarding the school's current management of AB's diabetes. It seems the main issue is training around the Libre 2. I have attached the Diabetes team's advice sheet re Libre 2 for you to read. If there are any specific amendments that you would like the school to consider please let me know…I can tell the school…regarding his high BG levels, you were unsure if he has a virus, but you said that he doesn't seem to be unwell. You and the school are concerned about high BG levels over the last 6 days. I look forward to receiving the ratios, once you check the meter. We can then make further changes to them if necessary.*' The mother responded by email [I1532] setting out her suggested amendments to the instructions that the school should be given in relation to AB's diabetic care. That, I consider, is a good example of the mother and the nurse working together well.

151. On 3rd March 2021, the school noted as follows on CPOMS [C61]: '*The diabetic nurse telephoned me back and I explained that we were concerned as AB levels were so high then low today. (Re: training November 2021 AB level @ 8.15 = 18.5, at 11.40 = 3.8, 1.00 pm. = 19.00) The nurse explained we should not worry about this - this is to be expected. The new device that has been fitted on AB's arm would constantly monitor his levels. The nurse said the best way to describe it was it is like a person being in hospital and they are having two hourly checks, and the temp, blood pressure would ok however, if you wired the patient up to a monitor it would be a very different situation as in what we are seeing with AB different readings. We must remember if over 15 to make sure we check his Ketone levels.*'

152. Later that day, AB was admitted to hospital with left thigh pain and was noted to have a urinary tract infection [E52]. The mother said that AB had woken at 2 a.m. complaining of thigh pain which had continued during the morning. The hospital recorded him as being clinically very well. The diagnosis was muscle injury, hyperglycaemia and urinary tract infection [I1529]. Nurse TG wrote an email to the mother saying: '*I guess that explains the high BG experiencing, at least you now have got to the bottom of it…his BG levels may naturally come down into the target range once the antibiotics start to work, so we may not need to alter ratios…I will try to make contact with the school today.'* AB was discharged from hospital on the same day.

153. The mother says at C169: *'AB was diagnosed with a UTI on 3rd March 2021. He had had raised blood glucose and ketones. I took him to hospital on 3rd March and again on 7th March as he still had the UTI and high blood glucose. It transpired he had been put on the wrong type of antibiotics on the 3rd March and he was given the correct type on 7th March. AB was discharged back home on the 8th March. During that admission, it was agreed by the doctors that AB's "antibiotics may not be kicking in" so his "insulin requirements may be less" [I1587].'*

154. On 5th March 2021 the mother was involved in the first exchange of texts to which my particular attention was drawn. This was an exchange with her half-brother's partner at about 21:00 hrs and is to be found at EM-678. It is necessary to start at EM-675. There, the mother tells the partner that AB's blood glucose levels are 15.9 and he is drenched in sweat. The mother says: '*I'm hanging I've been up for a week and a half straight.'* The mother says that she is waiting for the doctor to call her back. There is an exchange about the doctor and the fact that, it is said, the antibiotic had sugar in it. At 21:55 the mother said that the doctor had rung back and had said 'just leave it' and that the mother should ring back if his blood glucose levels went higher. The mother then writes: '*so fuck that, I'm giving him a correction dose'*. There is an entry in the GP records at I4539; it records that the 'BM' (blood glucose levels) were 32 'this morning…no ketones on testing'.

155. The LibreView chart for this day is at DM-J899. It shows that AB's blood glucose levels had been very high that morning (up to 27.8 or beyond because that is the maximum reading). They then dropped to a hypo of 3.6 after lunch before rising again to 19.4. At about 20:00 hrs they were 15.2 and then increased to about 16.9.

156. The Local Authority's submissions about this exchange are at paragraphs 132-134 of their closing submissions. The guardian does not mention this date in her counsel's submissions, as far as I can find.

157. In my opinion there is nothing in the points that the Local Authority makes about this exchange of text messages. AB's levels were high and were increasing at 21:00 hrs. It was getting late at night. The blood glucose levels were well beyond the action point of 12. It is entirely understandable that the mother would not want to ring back later and was tired. She had been trained in how to give correction doses. There is no professional support for any criticism of her relating to that night. Any suggestion that this shows a tendency of the mother's to 'go it alone' when deciding to treat his diabetes is without any merit. It is not even known whether the correction dose was given. AB's blood glucose levels reduced gradually at about this time so that it reached about 10 by 5 o'clock next morning. The language used by the mother is the sort of language that people do use in private text exchanges. Where the 32 reading came from in the GP's notes, I do not know; it could relate to the 'off the scale' reading of 27.8.

158. To my mind, this is an example of the dangers of reading messages in isolation. Counsel for the mother referred me to authority which I have considered. However, I am not sure that it does require authority to identify the need for care when reviewing text messages that are sent in the expectation that they will not be seen by anyone other than the intended recipient. Further, it is simply wrong to treat words in a text exchange as if they were chosen with precision and full, dictionary-based meaning.

159. On 6th March 2021, AB was admitted to A and E with high blood glucose levels which were not improving despite an increase in insulin [I1560]; the LibreView readings at J899 show how high they were (up to the maximum of 27.8). His insulin levels were increased during his admission and his blood sugar levels improved [I1560]. He was seen by an ST3, Dr CW [I1571] who noted: '*two weeks of high blood sugars. Diagnosed with UTI two weeks ago…yesterday BMS were 'unrecordably high'.* At I 1586 a Dr W ('Registrar ST8') wrote that the mother had called '<u>multiple</u> times over weekend as concerned re high BG…BG still high and concerned he was looking unwell so advised to come in. Ketones were normal…Needs increase in insulin…Mum says not coping with BG at home'. In oral evidence Dr G said that he could not recall whether this was reported to him or not. I accept that this was a very difficult time for AB and for the mother and the mother was expressing that she was finding things very difficult. I can only imagine that most parents would feel the same.

160. I accept that the evidence shows that AB's blood glucose levels were high during this period. I also accept that the mother was co-operating with the hospital in trying to deal with them. There is no criticism that can possibly be made about her actions at that point on the evidence before me. Events were not helped by the wrong antibiotic being given to AB.

161. Dr G explains this admission at SB-C49 by stating: '*On the 6th March 2021, AB was admitted with very high blood glucose levels (blood glucose levels>20 mmol/L). In the 2 weeks preceding the admission, AB reportedly had some symptoms suggestive of urinary tract infection and commenced on antibiotics by his GP. As AB's blood glucose levels remained high, insulin doses were increased accordingly (Lantus*

increased from 3.5 to 6 units and meal time insulin (Novorapid) doses were also increased) during the course of his admission and he was discharged.'

162. **8th March 2021** - AB was discharged home [SB-C49]. There is an entry by a Nurse CM at I4366 where she records the mother's anxiety. The note reads: '*18:26:00 ... Mum gives 150ml milk before bed with no insulin mum advised to review this with use of the libre graphs. Mum anxious and responding lots to alarms on libre. Mum given some team libre arrows advice Mum advised to give less hypo treatment as was giving 3 wine gums - advised 2 based on ISPAD guidance 3g per 10kg body weight. Mum to call for review tomorrow morning with PDSNs please.'*

163. **9th March 2021**: Nurse G recorded at I4366 (timed 11;56 hrs): '*Telephone with mum who reports that AB is ok today. Lantus 3.5 units given by mum last night (dose prior to hospital admission). Woke at 6.8 this am, hypo 2.9mmols 3 hrs post breakfast of 2.9mmols. 6.5mmols pre-lunch. mum will download libre and expert meter later and will call tomorrow. We discussed that we may need to reduce mealtime doses further. Mum happy with this information.'* The LibreView chart is at DM-J901 and shows seven hypos that day but it is nothing like the picture that follows the next day.

164. In a text message to a man called M the mother wrote [EM-803]: '*So 3 weeks ago his sugar levels started to rise real bad he was high all day every day couldn't understand why I liaised with his team they changed his ratios to see if that worked then 2 weeks ago his alarm went off in the middle of the night to say it was high I tried to wake him but he wouldn't wake up I tried everything but he wouldn't move he was just lifeless so I called an ambulance and we've been here ever since that day hopefully get to go home today though :) be come off support after a week and he's been doing really well levels are starting to become stable…Turns out he had a urine infection nothing major you'd think but clearly it only takes a little infection to make him really ill.'*

165. I was taken to this in the Local Authority's closing submissions (paragraphs 6-10). It was suggested that this shows the mother's untruthfulness and attention seeking behaviour. Mr Larizadeh QC asked: *'Why is she texting about calling an ambulance or being in hospital? Why is the mother being dishonest to M? These were private messages that the mother thought would never see the light of day. She sends these messages that are clearly lies and shows her ability to make things up. They are to do with medical issues.'*

166. The mother was asked about this and said*: 'Other than in July I have not called an ambulance. I can't remember who M is. I think that I had met him online. I can't remember if AB's alarm went off in the middle of the night at about this time…I can't remember if I tried to wake AB up in the middle of the night at this time. I do not remember if he was lifeless or whether I called an ambulance in the middle of the night. I can't remember this conversation. AB was not in hospital then.'* The guardian does not mention these texts in her counsel's closing submissions; I agree with the guardian's approach.

167. I accept that, in this text exchange, the mother was not telling the truth to M. But to suggest that this text exchange can have some bearing on the issues before me is wrong, even if this text exchange is taken cumulatively with the others. The most that can be

said is that this is compatible with my impression that the mother was seeking sympathy by giving exaggerated accounts at a time of stress and tiredness. There is no basis for thinking that this had any impact on her care of AB or that it induced anyone else, such as the medics, to do anything in relation to AB. It was a mother seeking sympathy from a man that she had met online by giving him an exaggerated account of the state of health of her son. Overall, I agree with Mr Goodwin QC: 'so what?'

168. Much time was taken with these text messages when the mother was giving oral evidence; I did inform counsel that, although I would not interfere with how the Local Authority wished to present their case, the areas about which I was *particularly* interested in hearing the mother's evidence (which, of course, came after that of Professor Hindmarsh and foreseeably, was truncated due to her panic attacks) were: a) whether she was coping with the management of AB's diabetes between March and September 2021 and b) the events of 24th and 28th July. Further, at an early stage and having studied hard the report of Professor Hindmarsh, I did ask whether there could be concentration, in relation to covert administration of insulin, on the three dates identified by Professor Hindmarsh – 16th March 20221, 24 July and 28th July 2021. As it was, the enquiry was much broader.

169. **On 10th March 2021** AB was admitted again due to hypoglycaemia [E52]. He remained in hospital until 4th April 2021. The LibreView readings at J901 show that he had 19 hypos that day, the lowest of which was 2.9. I would ask anyone reading this judgment to look at the LibreView chart. It does paint a troubling picture in relation to which the mother did seek help. I asked the mother whether she was struggling that day and, having looked at the chart at DM-J901, she said that it was a hard day. That does not mean that she is to blame. I can only imagine that many other parents would 'struggle' in those circumstances.

170. At I4365 Nurse G wrote at 11:19: '*Written in retrospect as telephone with mum yesterday and ratios changed for eve meal and lunch. Mum has spoken to Registrar as hypo every 2 hrs last night on 3.5 units Lantus. Hypo again this morning despite a reduction in insulin with breakfast from 1:20 to 1:30g. Lunch was 1:55g so agreed to change it to 1:100g for now and to only give 1/2 unit Novorapid with lunch. review later. PDSN to call school to update*'.

171. At 15:34 Nurse G wrote: '*Call from mum. BG 1141. 15.4 - 49g of cho and 0.5units Novorapid given (no correction dose). 1249 - 16.5. 30 mins later approx. 7mmols. 1322 - 3.8mmols. 1400 3.9mmols. 1515 - 7.1 mmols. Spoke to Registrar and she will discuss with the consultant and come back to me. Mum managing well*'.

172. Then, at 17:01, Nurse G wrote [I4365]: '*mum gave 1 gummy bear as per previous advice a few days ago because he was just about to eat 41g of cho. advised to go ahead and eat no insulin cover. BG 1 hour later was 9.8mmol Ketones 0.0. During this time Registrar was discussing a plan with Dr G. Plan was to give 2.5 units Lantus and 1:80g for tea. I advised I was unhappy with this and called Dr G directly. Discussed and advised I would give no more than 2 units Lantus maybe only 1.5 units. Advised tea eaten with no insulin cover but that I would call to review. Dr G advised he needed an admission Called mum to update and she was happy with this and will attend ED in the next hour. I have asked her to download the meter before she leaves. She can access it with her password. Plan from Dr G is to give 1.5 units Lantus tonight and*

1:50g with breakfast tomorrow. PDSN to pick up in the morning. Congratulated mum on an amazing job overnight and today. Reassured her that this is unusual hence the review/admission to ED.'

173. Professor Hindmarsh considered the LibreView charts at J901-2 and said that a lot of the lows are after highs; so, he said, either there was a reaction to food intake or there has been an attempt to correct the highs and, as a result of correction, there were lows.

174. At SB-C48 Dr G says: '*On the 10th March 2021, AB was admitted due to concerns regarding repeated hypoglycaemia (low blood glucose levels between 2-3 mmol/L) at home. He was noted to have a blood glucose level of 2.7mmol/L on arrival to the A/E. AB's insulin doses (both his long acting Lantus and short acting insulin NovoRapid) were subsequently reduced during the course of admission. Despite him being on small dose of insulin, AB continued to have hypoglycaemias'*.

175. The mother says at C169: '*I took him back into hospital on 10th March at the request of Dr G, AB's named Paediatric Endocrinologist at The Children's Hospital. AB had been going hypo frequently since his discharge on 8th March 2021. I had been in touch with the diabetes team and the records of my calls to the team can be found at [*I4365] to [I4366]. *I can see that there was a disagreement between the paediatric diabetes specialist nurse Nurse G and Dr G about the amount of insulin AB was on, with Nurse G thinking it was too high. After I was asked to bring AB back into hospital on 10th March 2021, that admission ended up being a very long hospital stay, whilst the doctors tried to work out a level and type of insulin that worked. He was on Lantus and Novorapid injections at the time and he was still taking his antibiotics for his UTI. At the beginning of this admission, his short acting insulin was stopped*'.

176. The second allegation in the schedule is: '*AB's admission from 10 March 2021 was due to a hypoglycaemic episode that occurred because of the mother's failure to manage AB's diabetic care and treatment, deliberately or without reasonable care.'*

177. In my opinion, this allegation is without substance. On 10th March 2021 the mother was in contact with Nurse G three times and followed her advice. When advised to come into hospital, she did so. The hypos on 9th and 10th March followed a period when AB had been suffering from the UTI and he had been hyperglycaemic. Steps were being taken to bring his diabetes back under control. The 10th March 2021 was the first day that there was a pattern like that shown at J901 and, up to that point, the mother's diabetic care of AB had been reasonable. I do not think that the mother can be criticised for the events of those two days (9th and 10th March).

178. At E66 Professor Hindmarsh says: '*The admission in March 2021 followed dose adjustments for high blood glucose associated with a urine infection. Shortly after this AB presented with hypoglycaemia and this was recorded on both the Libre glucose sensor system and by blood glucose testing. Hypoglycaemia can be encountered at times during the first year following diagnosis. This usually results from ongoing insulin release from the remaining beta cells of the pancreas in response to high blood glucose. This endogenous release summates with any exogenous insulin administered leading to a greater glucose reducing effect than might be anticipated. There was certainly evidence of ongoing insulin action in terms of suppression of plasma fatty acids and 3-betahydroxybutyrate concentrations. Insulin had to be discontinued for*

periods of time which can occur during this phase of the disease process. The hypoglycaemia screens were unhelpful in terms of helping understand the cause. Plasma insulin concentrations were low on the screens of 16th and 18th March 2021 but we do not know what the insulin was likely to be as the [local area] assay would not be able to measure Novorapid or the long-acting insulin which is what AB was on. The Royal Surrey measurement on 18th March 2021 showed a concentration at the lower limit of detection for the assay which could be endogenous or exogenous. C-peptide was present in the 16th March screen suggesting some endogenous insulin production albeit not much although we would anticipate very little endogenous secretion below 4.4 mmol/l. Given the results available the diabetes team made appropriate adjustments to the insulin regimen.'

179. **The admission from 10th March to 4th April 2021 (25 days)** - Therefore, this was a difficult period in which attempts were being made to keep AB's blood glucose levels under control. I would ask anyone reading the judgment to look at DM-J902 (11th March) to DM-J911 (2nd April – two days before discharge). It shows that, even when AB was in hospital and receiving specialist in-patient care, it was not possible to avoid hypos or, at times hypers. This is consistent with the above passage from the report of Professor Hindmarsh [E66]. The allegation of covert administration of insulin during this period on 14th or 16th March is no longer pursued by the Local Authority. The next date that features on the schedule of allegations is 13th June.

180. An example of the continuing production of some endogenous insulin can be seen on 13th March in relation to which Professor Hindmarsh says [E53]: '*The following day there were two hypoglycaemic episodes at 02.20 and 09.00. C-Peptide was measured on samples drawn at 06.08 and was measurable at 265 pmol/l which is in the lower range of normality suggesting that any endogenous insulin being produced was regulated normally. A plasma cortisol concentration at 09.00 was 163 nmol/l which is low for that time of day.'* I accept that must have made the regulation of blood glucose levels, and the calculation of the amount of exogenous insulin to administer, difficult.

181. **14th March 2021** – The mother sent text messages at 20:38 hrs and after to her half brothers partner [EM-935]: She wrote: *ABs in a bad hypo he's struggling to wake up… Sugars have gone up to 4 14/03/2021…Not great but it's better than 1.9. 3 hypo treatments that took…He's dropped again…Mate he's lifeless.'* In evidence she was asked why she had described AB as 'lifeless' when the nurses' description of him that night [I1715] was that AB was '*sleepy, irritable, unsettled and combative…tried again to wake him and give him glucogel but he spat it out, offered wine gums and refused*.' The mother said that she used the word 'lifeless' as an expression and did not mean it literally. She said that she did not remember what happened that day.

182. Dr B at E3: *'Overnight on the 14th March during an inpatient stay, AB required a continuous intravenous infusion of glucose over several hours to maintain a normal blood glucose level, although he had only received a very small dose of 1 unit of long acting insulin at bedtime.'*

183. Dr G says at SB-C49: '*Overnight on the 14th March 2021, AB required an intravenous glucose bolus (10%) to correct his low blood sugar levels (2.7-3.6mmol/L). As his blood sugar levels were falling despite the intravenous glucose bolus, he was*

commenced on continuous intravenous infusion of glucose over several hours to maintain normal blood glucose level, although he had only received a very small dose of 1 unit of long acting insulin at bedtime. ...AB had a test to check his cortisol levels as low cortisol levels can contribute to hypoglycaemia. His test showed normal cortisol. AB had his C-Peptide levels checked in his blood. The C-Peptide levels indicate the inherent insulin reserve in the body. The C-Peptide levels continue to decline over time in patients with type 1 diabetes indicating that the ability to produce endogenous insulin is lost during the course of the disease. AB's C-Peptide levels was 472 pmol/L at the time of his diagnosis and 48 pmol/L in March 2021 which is suggestive that AB's body is losing the ability to make its own insulin. The low C-Peptide levels do not suggest inherent, unusual sensitivity to insulin'.

184. The medical records state that, overnight, there had been three episodes requiring wine gums / glucogel and that the mother was frustrated about not knowing what was wrong [I1780]. On a ward round that evening AB was noted to be sleepy, refusing glucogel and wine gums and being combative and unco-operative. A decision was made, therefore, to cannulate him and give him a 2 ml/kg bolus of 10% dextrose over 15 minutes [I1714, 1726, 1798].

185. In her statement, the mother says [C169]: '*I can't say why AB was hypo that night but I do recall and it is recorded that AB was not co-operating with his oral glucose treatment which is why a glucose infusion drip was needed [I1716]. AB was spitting out his Glucogel and refusing to eat the wine gums. He was described by the doctor as 'combative and uncooperative [I1716].*

186. The Local Authority argues that the above text is an example of the 'mother's exaggeration, mistruths and attention seeking-behaviour.' In my opinion there is nothing of any relevance in the point that the Local Authority is seeking to make. This is a WhatsApp text message. The mother was not using the word 'lifeless' to bear its literal meaning. AB was and, happily, remains alive. On the face of the message the mother was saying that he was struggling to wake and that has to be read with the word 'lifeless'. The message was sent at a time that was after his bedtime and when he was having a hypo of 2.9 [DM-J903]. Too much time was spent on that text.

187. The strains on AB and the mother remained apparent. On 15th March 2021 the mother reported to a nurse that AB was more his normal self [I1788]. At 10:30 there was a review by a paediatric diabetes specialist nurse [I1720] in which it was recorded that '*mum exhausted and noticing that AB is also grumpy which is unusual. Mum plans to go home for a few hours this afternoon and nan to stay with AB. Explored with AB re insulin injections and who had given these over the weekend. AB did not want to talk to me and wanted to watch his iPad. I asked Mum who said the nurses had all insulin and there were no extra insulin pens in the room. Mum very understanding why I had asked these questions.'*

188. I have already referred to the evidence of Professor Hindmarsh as to the 16th March and the abandonment by the Local Authority of the allegation relating to it. The origin of the allegation was described by Professor Hindmarsh in these terms: '*The next episode of hypoglycaemia took place on the morning of 16th March 2021 at 00.25 with two values recorded of 3.6 and 3.2 mmol/l. At this stage no insulin had been given for 24 hours to determine how AB would manage without insulin. At 03.03 with a near*

patient blood glucose of 2.8 mmol/l a hypoglycaemia screen was undertaken the results of which are shown in Table 1.' The relevant part of Table 1 showed:

Date	16.03.21
Time	03:05
Insulin used	Novorapid
Blood glucose mmol/l	3.3

189. Having heard the evidence in this case, especially that of Professor Hindmarsh, if the allegation of wrongful administration of insulin had been pursued, I would have rejected it. He said that he would certainly not support an allegation of unauthorised administration on that date. I accept the submissions of counsel for the mother in paragraph 52 of their submission in relation to this date.

190. **17th March 2021** – The nursing notes at I1798 record that the mother was feeling disheartened because she felt that the doctors had given up hope and would discharge AB home without any answers [I1798]. The note at I1800 says that the mother was reassured by the nurses.

191. At 23.49 on 21st March 2021 the mother was in text communication with someone called C [EM118]. The mother said that she could not remember who C is. In the text exchange she said: '*I'm so fed up. Tired and drained. It's like he goes from one extreme to the other. He come out if his hypo finally 2 But gone the other way and is now 31.2'* DM-J906 in the LibreView bundle shows that the highest recorded reading that day was 21.2 at 14:00 and that the readings from 23:00 onwards are missing from the chart. The last reading at 23:00 hrs is 4. The Local Authority relies on that in its closing speech, paragraphs 14 and 15. There is nothing in this point either. There is nothing to suggest that this exchange influenced AB's care. The 31.2 could be a typo (for 21.2, the reading at 14:00 – DM-J906) but even if it was not, it does not make any difference to this case. If the mother was exaggerating to a man she has met online in order to attract sympathy and interest, how can that be relevant to this case?

192. I do accept that the mother was tired and drained. On 22nd March 2021, the mother is recorded as having been teary, tearfully exhausted and not sleeping. She was keen to speak to a psychologist [I1816 and I1743]. The nursing notes for 23rd March 2021 record [I1828] that AB's behaviour was beginning to get '*tricky due to lack of stimulation. Play input is required. ?School. Mum feeling frustrated and isolated. Dad (separated) not helpful. Friends have own children but are supportive. To keep an eye on. Mum is interacting with AB well.'* By that stage she had been sleeping on a hospital bed next to AB for twelve nights.

193. On 25th March 2021, the mother spoke to the clinical psychologist, Dr A [I1746]. She expressed frustration and confusion about AB's 'ongoing hospitalisation'. As to AB, he said to Dr A that he was feeling well and could not say why he was in hospital. The mother said that she was stressed, tired and under financial pressure because she was not able to work. The psychologist encouraged her to take breaks when she could. The note at 1746 records that the mother was eager to go home but nervous about managing

there. At C170 the mother says: '*I was nervous about managing AB's diabetes, given how unsettled it had been. His behaviour had been hard to manage because he was so bored and frustrated by [not] being at home and I had said how I felt I really needed a break….My Mum, thankfully, was able to cover for one night on 27th March 2021, so I got a night at home in my own bed.'*

194. On 29th March 2021 Dr G says that AB was started on long-acting insulin (Levemir 0.5 units) to be given in the morning time [SB-C50]. At I1850 it is recorded that AB was awake [20:00 hrs] and '*was angry with the mother, throwing himself on the bed and crawling on the floor because the mother asked him to sleep and collected the phone from him. BM checked and read 23.8 and ketones 0.2. AB later calmed down with Mum's persuasion and slept'* [I1850].

195. On 1st April 2021 the dietitian was asked to see AB [I1759]. The note at that page includes: '*AB not managing to eat all his meals leading to hypo. I spoke to mother. Mother reports that AB's meal yesterday had hardly any CHO (carbohydrate) and she sent it away for more CHO. Mum said that she has been giving him food from outside (purchased) or crisps to compensate…I re-iterated the importance of making sure that if he has not eaten his CHO, this is compensated. Mum understood this and said that she would compensate the missing CHO. I asked the mother to use her CHO counting skills to manage hits. I showed two menus (extra meal options) but mother said that the options were not something AB would eat. Plan: Ensure CHO intake in all meals. If not taken, give other CHO instead, such as yoghurt, toast etc.'*. I accept that is precisely the sort of instruction that the mother would find difficult due to her dyscalculia.

196. On 4th April 2021 AB was discharged home. The decision to discharge him was made on 3rd April but the discharge documentation ('TTO' – see the glossary) was not ready. Dr G says [SB-C50] that AB left with small doses of long-acting insulin (0.5 units) and short-acting insulin (0.5 units) to be given before breakfast. On the 4th April it was noted that his 'BMs' were stable and 'nurses and mum' were happy for him to be discharged [I1765 and I1867].

197. The discharge summary records: '*Admitted with recurrent episodes of hypoglycaemia on a background of Type 1 Diabetes. He was recently admitted with a UTI and recurrent hyperglycaemia and had been completing a course of nitrofurantoin. His long and short acting insulin were both stopped during admission in order to monitor his BMs, however he continued to have fluctuating hyperglycaemic and hypoglycaemic episodes during this time despite this adjustment to his insulin. He had multiple hypoglycaemia screening blood tests however the results that have come back so far have not been concerning. He has been slowly increasing on insulin and is presently on half a unit of Levemir in the morning and half a unit of Novorapid with his morning and evening meals. AB will be able to be discharged on this regimen as long as he has no hypoglycaemic episodes for 24 hours*' *[I2011].*

198. In oral evidence Dr G was asked about the passage in the above discharge summary where it states: *'he had multiple hypoglycaemia screening blood tests however the results that have come back so far have not been concerning'*. He said that this meant that there was no evidence of exogenous insulin – '*when we tested his blood we found no evidence to support a conclusion of insulin administration'*.

199. On 7th April 2021 (i.e. three days later), AB returned to hospital and remained there until 13th April 2021. Dr G explains this admission to hospital at SB-C51 in these terms: '*AB was again admitted on the 7th April 2021 with concerns about low blood sugar levels at home and difficulty in waking him to treat his low blood glucose levels. AB reportedly had his morning dose of long acting insulin (Levemir 0.5 units) on the morning of 6th April 2021. At 13.30 hrs his blood glucose levels was 23.2 mmol/L which then dropped to 3.6mmol/L at 15:15 hrs despite AB's mother reportedly not giving him any meal time short acting insulin. AB was observed in the hospital for few days and during this period there were fluctuations with his blood sugars ranging from very low blood sugars to high blood sugar levels. During this admission he was also seen by multiple Endocrine and Diabetes consultant colleagues. The meal time NovoRapid Insulin was changed to Actrapid insulin (as this has slower onset of action than NovoRapid) on 9th of April 2021 and he was discharged on 13th April 2021.'*

200. The mother says at C171: '*later that night on 7th April 2021, I called the diabetes team at 8.30 p.m. as AB's blood glucose was 3.3 and he was refusing to have a snack [I2022]. When the team called me back at 9:30 p.m., AB was no longer hypo, but I described him as 'difficult to rouse' [I2022], which made me anxious, so I was advised to bring him back into hospital. He was not hypo on arrival at hospital [I2022], however, we remained at hospital until the 13th April 2021 for monitoring purposes…it is during this admission that AB's insulin was changed to Actrapid and I was trained how to draw it up from a vial and administer it through a syringe and needle [I4363]. I also received training for the insulin pump.*

201. The LibreView chart at DM-J939 shows that AB was very hyperglycaemic that day at times, off the scale with 27.8 being recorded for a long period in the afternoon. His blood glucose levels then dropped suddenly from 24.4 to 3.2, which would signal clearly to me that he had an injection of insulin (unsurprisingly). The mother was obviously struggling with his blood glucose levels, but that does not mean that she was to blame. In any event, she sought help and came into hospital. She is not to be criticised for the events of those three days.

202. **April -** At E66, Professor Hindmarsh says: '*During April 2021 the hypoglycaemic episodes continued and were treated without any further evaluation. Pump therapy started at the end of April but was associated with high blood glucose values. These did not respond to the usual pump hyperglycaemia protocol and led to decompensation with polyuria and polydipsia. He responded to a high dose insulin sliding scale and then standard dosing with Actrapid and Insulatard short- and long-acting insulins.'* At E71 Professor Hindmarsh says: '*The further hypoglycaemic episodes in April were not evaluated any further but adjustments to the types of insulin used as well as a trial of insulin pump therapy were undertaken. These multiple insulin changes including technology changes might have been confusing particularly given mother's problems with numeracy. How well she could cope with the low dose schedule using the pen system would need to be assessed particularly how easy would it be for her to confuse decimals and numbers. This is a particular issue with the pump where judgements on bolus amount need to be made using the decimal system.'*

203. In my opinion there is simply no evidential basis for seeking to blame the mother for the difficulties with AB's blood glucose levels in April. Twelve days of that month

were spent in hospital and the hospital also struggled to regulate his blood glucose levels. The nurses were able to view the LibreView download material remotely (see e.g. on 16th April Nurse M wrote at I4361*:* '*Libre downloaded and discussed with Dr . Plan made…etc'*). There is no suggestion that the mother was failing to co-operate with the hospital. Nobody in the hospital at that time was suggesting that she was exaggerating AB's symptoms or mismanaging his diabetic care. I accept that the strains of life and caring for AB were beginning to build up with the mother (see the next chronological entry below); she had to give up work in this month. I do not make any criticism of the mother for the events of April. The legal direction about 'blame bias' is important.

204. On 12th April 2021 the psychologist Dr A saw the mother and AB again [I2057]. AB expressed frustration about being in hospital and was repeatedly asking when he would go home. The purpose of the meeting was to 'complete psychology pump pathway assessment'. The note records the psychologist had no major concerns concerning the pump - '*no issues so far with procedural anxiety. AB aware and happy with the plan to move to pump therapy*.' On 13th April 2021, AB was discharged [SB-C51].

205. The mother says at C172 that the period when they were at home from 13th to 25th April was one in which AB's blood glucose levels *'were OK at first but he then experienced a period of lots of hypos…by the 20th April 2021, his levels were improving, however the problem then became that he had high blood glucose levels.'*

206. The LibreView readings for this period of 13th April to 25th April are at DM-J942 to 946. Those charts show that matters were relatively stable following the discharge from hospital on 13th April. The charts do not show a period where there were a lot of hypos. However, on 22nd April [DM-J946] there was a succession of hypos in the morning, including one reading of 2.2 mmol/l and then, as the mother says, a succession of hyperglycaemic readings. On 25th April 2021 AB was hyperglycaemic for the whole of the day. A number of readings were over 27 [DM-J947].

207. AB was not detained in hospital overnight and was discharged on that same day, 25th April 2021. At I2299 it is recorded that the mother was 'very happy to go home.' The discharge summary stated [I2222]: '*Reason for admission Erratic blood glucose. Blood sugar instability with hyperglycaemia and hypoglycaemia. Over the past 4 days prior to presentation AB's BMs have been raised (between 17 - 22). When BM corrected yesterday, extreme hypo of 2.9 after 0.5units of insulin, with elevated BMs thereafter. Ketones have not been elevated. Highest recorded at home: 0.4. Endocrine team have established that higher BMs are to be tolerated in AB's case, with the higher risk of DKA accepted. The Mother understands the signs to look out for with DKA and feels confident in monitoring for' this, however has run out of Ketostix at home and this was key-motivator for seeking health-care attention. AB was monitored over the course of the day and admitted over the afternoon into the evening. His blood sugars settled down without additional correction, he had his evening 0.5units of Actrapid (as per his endocrine plan), to go along with his supper meal'*.

208. AB remained out of hospital until 30th April. In the time between 25th and 30th April he was constantly hyperglycaemic with readings which were often over 27. There were a number of readings at the maximum for LibreView of 27.8 mmol/l [DM-947-948]. I would ask anyone reading this judgment to look at them and to recollect the effect that

readings of that height would signify for AB. All this occurred, however, with the full involvement of the Paediatric Diabetes Nursing team (see I4358) and the suggestion was that pump infusion might help. I think that the picture from the LibreView readings at this point is that the mother was plainly struggling with the management of his diabetes. What is more, the hospital struggled too, with the same phenomenon, when AB was admitted to the hospital on 30th April 2021. Even in hospital his levels were exceptionally high - see DM-J948-9. There is no basis for making criticisms of the mother in relation to those five days in which he was out of hospital between 25th and 30th April. Of course, very high blood glucose levels would not be caused by the unauthorised wrongful administration of insulin as insulin would lower the levels.

209. Dr G says at SB-C51 that: '*As there were concerns about low blood sugars, despite taking very small doses of insulin, a decision was made to put AB on an insulin pump which would enable insulin delivery at much smaller doses. The pump was commenced on 27th April 2021'*. Up to that point, the insulin had been delivered by injection – see the appendices, page 8. The 'pump' was a Medtronic pump that is described in the glossary

210. Nurse T attended the mother's home on 27th April in order for the mother to have training on the pump. The training was also provided remotely by a CW of Medtronic. The mother was provided with daily support in relation to her use of the pump and training was also planned for the school; however the training for the school did not happen since AB was admitted to hospital [SB-C20]. Nurse T said that she was satisfied that the mother's knowledge of the pump was the same as any other family and we did phone her every day to discuss whether the settings needed to be changed. I accept that the mother could use the machine. I have looked at a YouTube explanation of how it works and it is not difficult (see the glossary). That in no way detracts from what I have said about the mother having difficulty with more intricate calculations.

211. Nurse T said in oral evidence: *We were talking about carb ratios (which she would already have been doing), sick day rules, pump readings etc. It is a lot to take on board for anyone and a degree of confidence – at no point did I feel that the mother was not capable of managing the training. It requires some proficiency in numeracy – a certain amount. It has a mini calculator built into the programme – you do have to put the figures into the pump. As to carb ratios the parent will count the carbohydrates into the pump and so the mother just has to put in the amount of carb into the pump and the pump does the rest. Initially we had used an insulin pen – goes up in one or half units and you literally turn the knob.'*

212. I accept that Nurse T did give efficient training to the mother. I note that the mother herself says this at C173: '*AB's diabetes nurse, Nurse T, visited us at home on 27th April 2021 and a representative from Medtronic attended via a webcam to fit his insulin pump and teach me and my mum how to use it [I4358]. We were taught about basal rates, bolus rates, carb ratios and sick day rules. It was complicated but I felt I sort of understood what I needed to do. The type of insulin prescribed was changed to Novorapid. The data from the Medtronic insulin pump shows exactly what insulin AB received via the pump from 27th April to 6th May 2021, what carbs he had, what correction doses were given and what his blood glucose levels were [I2490 to I2509] [I2846]. In the days leading up to his next admission, I felt like I was managing the pump quite well as his levels were either in range or quite high. I spoke to Nurse T*

from the diabetes team who helped me work out new carb ratios in an attempt to bring his levels down [I4357]. There were also a few occasions when he wet himself but Nurse T advised to speak to the GP if that continued to occur and get a urine test carried out.'

213. I am not confident that the mother would have been able to apply it consistently when unsupervised if there were anything other than elementary calculations involved. As Nurse T said, parents will doubt themselves and forget the various different things that they are taught. I note this passage from the report of Dr Pipon-Young at E197*: 'She was tearful at times, particularly when she recognised she was struggling. She often referred to feeling embarrassed at her inability to complete the tasks and to feeling "stupid". Her self-confidence seemed low'.*

214. I note that, in her statement, MGM says at paragraph 25: '*The Medtronic pump was difficult and complicated. I had the training and even I found it complicated. I never changed the bit that went into his skin. I wouldn't know how to do it so the Mother always did it. The needle would pull out a lot too and she would have to connect him back in. I had the training on how to use the pump, but I wouldn't have been confident to use it by myself. I would have had to use my handwritten notes to work out how to use it; my notes had a step by step guide as otherwise I would have struggled. He wasn't on the pump for long; he was on it then off it and back on it briefly. When he was on that pump, it just didn't get on with him. Even the nurses in the hospital didn't know how to use it, so would wake the Mother up to help. I was glad when he came off it. It was a huge amount of work…AB's treatment plans changed frequently, sometimes on a weekly or even daily basis. They would adjust the ratios a lot verbally by telephone to the Mother. The Mother would quite often ask me about how to work the numbers out and I would explain it to her. It was a lot for her because it was changing all the time. It was hard for the Mother; she would ask "mum, how much is that add that?". She never calculated figures in her head unless it was really simple.'*

215. **30th April to 19th May admission -** On 30th April 2021 AB returned to hospital and remained an inpatient until 19th May 2021 – a period of 20 days. On 30th April 2021 his blood glucose levels were very high for much of the day - the LibreView readings show a constant 27.8 mmol/l [DM-J948]. There is no sustained suggestion that the mother interfered with his treatment or did not co-operate with it fully. There is no criticism of the mother in relation to this period. It involved another 20 days when she was sleeping on a hospital bed in a small cubicle in a busy hospital.

216. The mother describes the events that led to him coming in. She says at C173 that she was worried because AB's blood glucose levels were still high and he had raised ketones. She spoke to Nurse T who advised her to change the basal rate and carb ratios again [I4357]. The mother says that she had to re-site the cannula three times as it kept falling out. In the afternoon she was concerned that he was lethargic and his levels were still high and so she took him into hospital that evening. The triage nurse described AB as being 'pale, dry lips, rousable but goes back to sleep straight away' [I2324]. His blood sugar level was 21.3 on admission.

217. Dr G says at SB-C51: '*AB presented on 30th April 2021 with persistent high blood glucose levels. During the admission, AB required progressively higher doses which needed to be delivered via the pump due to his persistently elevated blood glucose*

levels. Even on a very high insulin dose (2.2 units/kg/day) and appropriate cannula changes, there was no real response noted with his high blood sugar levels. As AB's blood glucose levels remained very high with ongoing ketosis, he was then switched to intravenous Actrapid insulin on a sliding scale (continuous intravenous infusion of insulin which is adjusted depending on his blood glucose levels) to which AB's blood glucose levels responded and his ketones started to decrease.'

218. At E55, Professor Hindmarsh says: '*During this admission the insulin pump therapy was commenced but AB became unwell with polyuria and polydipsia which did not resolve after three cannula changes. On pump therapy he continued to run high although overall his total daily insulin dose was quite low with very weak carbohydrate and correction ratios. By the 9th May 2021 he was on 1 Unit of insulin/kg/day and appropriate carbohydrate and correction ratios but continued with high blood glucose values. This continued until the 13th May 2005 when he developed high blood ketones implying lack of insulin delivery/action. An intravenous sliding scale insulin infusion was commenced with a good response although the total daily dose was elevated at 1.9 Units/kg/day. He was then switched to Insulatard as the long-acting insulin in a dose of 18 Units per day with Actrapid insulin at 9 Units. He was then discharged home on the 19th May 2021 on 14 Units of Insulatard at night and Humulin S 5 Units at breakfast, 4 Units at lunch and 4 Units with dinner (Total daily insulin dose 1.1 Units/kg/day).*

219. At C174 the mother says:

- '*At hospital I was told I could give "correction doses" via the pump if he remained high. I wasn't feeling very confident with the pump as it was complicated to use and I didn't feel entirely confident giving correction doses. The nurses were not all trained to do the correction doses so could not assist. I told a doctor on 2nd May 2021 that I was worried I didn't understand how to use the pump properly yet [I2394]. I was given a massive leaflet about how to use it. In fact, on 5th May 2021 a nurse saw that I needed further training on correction doses as I seemed to have miscalculated one of them. The nurse described me as confused and a registrar recorded that "education required for mum" [I2585].*

- *During the admission, AB didn't seem to be responding to the insulin and he had persistently high blood glucose [I2404]. It was recorded by the doctor that his difficult blood sugars could be caused by a viral UTI [I2349]. The level of insulin he needed kept getting increased yet he still remained high. He was having correction doses throughout the night which were administered by me. I would have to wake up every two hours to check his levels and give the correction dose under the observation of the nurses. Charts showing the frequency he was being given correction doses can be found at [I2471].*'

220. Dr B says at E8: '*Between the 30th April and 19th May and again between the 4th and 10th July, AB received insulin by subcutaneous infusion using an insulin pump rather than by repeated subcutaneous injections. An insulin pump can be very useful in accurately delivering very small doses of insulin. On both occasions when AB was receiving insulin via an insulin pump, he experienced persistent raised blood glucose levels along with raised blood ketone levels which together indicated inadequate insulin delivery. No fault was found with AB's insulin pump on either occasion when*

checked. Inadequate insulin delivery by his insulin pump continued whilst AB was a hospital inpatient. A sixfold increase in daily dose of insulin during insulin pump therapy failed to correct high blood glucose levels and as a result, AB was switched to an intravenous insulin infusion with rapid improvement in blood glucose and blood ketone levels. It is very difficult to explain the persistently raised blood glucose levels during insulin pump therapy despite much larger doses of insulin being administered. Careful observation did not identify any interference with insulin delivery from the insulin pump and these episodes therefore remain unexplained.'

221. I return to the LibreView readings from DM-J949. They show that, even in hospital to begin with, AB had very high readings. There were frequent readings of 27.8 mmol/l on 1st May, 2nd May, 3rd May, 4th May, 5th May, 6th May, 7th May, 8th May, 9th May, 10th May, 11th May, 12th May and 13th May 2021. Thus these were periods of very significant hyperglycaemia when AB's well-being would have been affected. It is only on 14th May 2021 (5 days before his discharge) that the blood glucose levels start to come down. On 14th May 2021 there was a fluctuating set of figures. Then on 15th May 2021 there were 11 hypos. Over the 17th, 18th and 19th May 2021 there were a large number of hypos (36 are recorded on the LibreView charts for those three days at DM-954).

222. The change on 14th May 2021 is explained by the mother in her statement [C176] on the basis that, on 13th May 2021, Nurse T, was '*not happy at all with AB being on the insulin pump , as it was clearly not working and in her view he had been left in a bad state for too long. Nurse T spoke to the doctors and said that he was going to be put on the sliding scale (infusion pump). The insulin pump was finally stopped and he was put on 'IV Actarapid on a study scale'* [I2430]. The mother says that she was never trained how to use the infusion pump (which is the hospital pump machinery, not the Medtronic pump) and never did manage it. She says that her understanding was that a sliding scale would help manage his levels better [C176]. She goes on to say: *'I would like to say that I never felt judged by Nurse T and I feel that she explained things to me clearly and in a way I could follow. The doctors would come in and speak to me, but sometimes it was just like they were speaking gibberish and they would use words that I didn't understand. Nurse T didn't use medical terms and made sure I understood.'*

223. At SB-C51, Dr G says that, 14th May 2021: '*AB's long acting insulin was changed to Insulatard (intermediate acting insulin) to be given at night time and Actrapid to be given with meals on the 14th May 2021. From the 16th May 2021, AB was found to have hypoglycaemic episodes which then resulted in reduction of his subcutaneous insulin doses. Both his Actrapid and Insulatard were starting to be slowly reduced'*.

224. Unsurprisingly, this period had an impact on the mother. On 7th May 2021, the mother saw Dr A who recorded that she was [I2416] '*very tired due to waking for correction dosing every 2 hours during night and AB very unsettled and distressed at bedtime during his admission. Mum feeling quite alone and unsupported during this admission, feels that it would be easier to manage at home with parents support and in own environment. Eager to get to the bottom of current difficulties and achieve stable blood glucose levels. Is looking forward to time at home this weekend and remains concerned about AB's well-being mental health during admission.*' The mother says that discussions with Dr A capture how she felt about the situation [C175]. She said that she was desperate to go home, as shown at I2423.

225. On 10th May 2021, Dr A met with the mother and AB again [I2450]. The mother told her that they had a good weekend of home leave; AB had enjoyed seeing his grandparents and she had some rest. The mother was '*tearful at times this morning and spoke about the stress of the admissions and frustration that they are not further forward. Mum concerned about damage to kidneys and wanting more support from nursing staff with corrections, especially overnight….Mum keen for AB to return to school.'*

226. On 19th May 2021, AB was discharged from hospital. At C177, the mother says '*AB had a number of hypo's under his new treatment plan (including to the night before he was discharged) but despite this, the doctor said he was OK to go home on the 19th May 2021. On the day we were discharged, he was taken off Actrapid and put on a new type of insulin that had not been on before, Humulin S…I was told that I should not be giving correction doses initially*' [I2448]. Dr G says [SB-C51]: '*The Actrapid was changed to Humulin S (rapid acting human insulin) from 19/5/21 as this comes in a pen and AB was discharged on 19th May 2021.'* Insulatard were also prescribed for night use. Dr G said that after this change AB's pattern changed, his insulin requirements got less and less over this period.

227. At C178 the mother says that, following his discharge on 19th May, '*he was mainly on target for his blood glucose levels, although there were a few easily correctable hypos...Around 23rd May 2021, he started to have more hypo episodes so Nurse T, advised me to give him less insulin. She reduced the Insulatard from 11 units to 9 units and changed his carb ratios. It seemed like a trial and error situation, where we were still working out what level of the new types of insulin worked. Overall, however, the situation seemed to be much better than on the insulin pump.'*

228. On 20th May 2021, Dr G saw AB at the diabetes clinic. In his follow up letter he wrote [I2788-9]: '*I saw AB along with his mother in the diabetes clinic. AB was recently discharged from the hospital when he was admitted with episodes of hyperglycaemia and ketones not responding to high doses of Insulin delivered via subcutaneous insulin pump. Eventually his Insulin was then converted to human Insulin in the form of Humulin S and Insulatard. Ever since the Insulin formulation was changed there was a noticeable difference to his blood sugar pattern as noted in his Freestyle Libre 2. AB has hypoglycaemias 2 hours after his meals despite having Insulin free snacks a couple of hours after his main meals. I have reduced his Insulatard to 10 units and changed his ratios to 1 unit for 20 g for lunch and evening meal I am hoping that his hypoglycaemias might be better with this. AB is otherwise very well in himself. His HbA1c today is 84 mmol/mol. I will see AB again in three months*.' The mother says that AB's insulin requirements kept *'getting less and less and all adjustments to his treatment plan were carried out in consultation with the diabetes team as recorded at I4354 and 4356.'*

229. That reduction in insulin can be seen in the notes of Nurse T for 24th May 2021 [I4355]. Her notes show a reducing amount of Insulatard being administered to AB, between the 24th May 2021 and 9th June 2021. On 9th June 2021 it is recorded by Nurse T that the mother had been giving 4 units, rather than the then advised 5 units of Insulatard. Nurse T said: '*I think that it was the mother taking a deliberate decision to give him less because she did not think that he needed the full amount. I approve of*

what she did as long as we think that it is consistent with AB's treatment. We respect the parent.' That day the note at I4355 records that, in discussion between the mother and Nurse T, the Insulatard was then reduced further to 3 units. So, the mother's actions in reducing it to 4, when she did, cannot be criticised.

230. In June 2021, Nurse S took over as AB's PDSN. At SB-C24 she says: '*After becoming AB's named nurse, I became increasingly concerned that he may die as a result of his severe hypoglycaemic episodes. I was concerned for both his short and long term health, due to the continued unstable blood glucose levels and the unpredictability and unexplainable responses to clinical interventions for his diabetes management'*. In oral evidence Nurse S said that AB's blood sugar levels went down to 1 mmol/l at one stage which is very low. Further he had repeated hypos and, she said: '*I was worried that he might have a hypo that might lead to his death*'.

231. I think that, in looking at the mass of information that this case has produced, the effect on AB of the history that I have already given could easily be lost. So, too, could the point that, up until this stage at least, there are no criticisms of any substance of the mother – she was a young and vulnerable mother who was caring for a diabetic child whose diabetes was causing considerable difficulties in its management.

232. The chronology now moves towards the period in which I find the mother was mismanaging AB's diabetic care. Before I get there, I have to deal with another text message that the Local Authority wishes me to consider.

233. So, in relation to 7 June 2021, the Local Authority makes yet another point of no substance about text messages. It relates to the mother texting someone called R. At 14.40 [EM E103], the mother wrote to R: *"my sons now a very brittle diabetic and we've just come out of hospital after spending 3 months straight in there"*. The Local Authority submits: '*This was not true. Further, at the time the message was written, AB had been out of hospital for over a week. The court is invited to find that the mother was exaggerating.'* I accept that AB had not been in hospital for '3 months straight' and was not in hospital when this was written, although over the previous three months, he had spent a large amount of time in hospital. However inappropriate it might be for the mother to speak of her son to men online like this, I do not accept that it has any bearing on the issues in this case for reasons that I have already stated in relation to other, similar, messages.

234. As to AB's education and the effect of the above chronology of events upon it I note that, on 11th June 2021, Ms G, of the child's school, sent an email to the mother [C227], saying: '*I have spoken with Ms L and Mrs P about AB returning to school full time. We are concerned that AB's levels are still very erratic and that returning full time until he is stable could set his recovery back again. I know that you are concerned about the amount of time that he has missed but we need to have a proper conversation with you about AB's needs and maintenance before he returns full time. Please bring him for a half day Monday and we can arrange to have a proper meeting to discuss what happens next*.'

235. **13th June to 29th July 2021 -** The chronology does now reach the 6½ week period that has come so heavily under scrutiny at this hearing. It is during this period, I find, that there are repeated instances of the mother not coping with AB's diabetic care leading

to events when his blood glucose levels were not properly regulated and, at times, became dangerously low. The first such instance occurred on 13th June 2021. It is essential, however, to place this forthcoming period in the context of the history that I have just set out.

236. **13th June 2021** - This is a Sunday. It is said by the mother that her brother took AB out on a bike ride after lunch. It was hot and the bike ride involved exercise. AB collapsed and, I find *was* unconscious with a blood reading that was about 1.3 mmol/l. The mother did not seek emergency medical assistance for him. For reasons that I set out, I reach two conclusions about this day. First, the very fact that AB's blood glucose levels dropped to 1.3 signals that his blood glucose levels were not being adequately managed. Of course heat and exercise can affect them. However, they are factors that affect every diabetic child and were known to this mother, who was AB's primary carer. It is pure chance that the events of that day did not result in more serious and permanent consequences for AB. Second, given the extent of his collapse, the mother should have sought immediate medical aid. I accept that AB's condition improved quickly and the mother consulted her own mother about it. I note that, on 21st July 2021 when there was another emergency, it took an ambulance two hours to arrive, but that does not explain the mother's approach to this medical emergency. I accept the arguments of the guardian in relation to this date.

237. In her statement the mother says this at C179:

'*On the 13th June 2021, he had a major hypo and this was the first time he was symptomatic. At 6:32am his blood sugar levels were 7.7 (just before breakfast) and two hours after his breakfast he was 4.6, so still in range (according to the finger prick Diasend records). He had one hypo at 10:33am when his blood sugar level was 3.9. I can't remember what AB had for lunch that day or at what time, and I don't recall what time I gave him his insulin injection, but having also reviewed the Libre Review records, I can see that he was 9.2 at about 1:30pm [I3061]. I recall that my brother took AB out for a bike ride in the airfield behind our house just after 2pm, but 15 minutes later ran back in with AB in his arms saying he had just collapsed. J said that a passer-by had given him some water and they had splashed it on his face to try and revive him.*

I was really concerned as I hadn't seen him like that before; he was clammy, sweaty and pale but his eyes were open. I would describe him as being a bit disorientated although responsive and he said he felt sick. I checked his bloods at 2:24pm (according to the Diasend finger prick log) and he was hypo with a reading of 2.3. I treated the hypo by giving him jelly babies from recollection (although I might have given him Glucogel, I can't remember). I exhibit a photograph taken of AB taken at 2.26pm which I took as I thought he looked grey, and I planned on showing it to the diabetes team (EXH/BR/2). AB's levels came up quite quickly and after 30 minutes he just wanted to play again. By 4pm, he was 5.7 according to his Diasend finger prick reading [I3044].

The heat that week had been a real struggle. I don't recall whether there was an actual heatwave or if it was just very hot, but I recall how AB was struggling with the hotter weather. I tried to keep him snacked up, every hour, with digestive biscuits but sometimes he was refusing to eat a biscuit, so I would give him crisps instead. I didn't take him to A & E on the 13th June 2021, as he came up quickly and seemed fine in

himself. It was a Sunday too, so the diabetes clinic wouldn't have been open and the alternative would have been to go to A & E, which didn't seem necessary given that he was fine once I had treated the hypo'.

238. In text messages to the father and his mother at EM-217 and EM-1936, the mother gave a different account. She said:

   i) *'My heart stopped an hour ago took AB out on his bike we was out for 10 minutes and he collapsed on the floor he was 1.3 he was 9.6 before we left I carried and ran back home with him gummies sorted him out but this heat is so scary for his levels.'*

   ii) The mother told the father's mother: *'AB fainted and collapsed by me on a bike ride.'*

239. At 13:50, about 30 minutes before texting the paternal grandmother, the mother had sent a text to her half brothers partner giving the account that AB had been on a bike ride with him. She advised her to ring 111 after the mother had told her that AB had been 'out' for 15 minutes.

240. In her oral evidence the mother said that she did not want to say to the father that AB had been out on a bike ride with her brother. He is not trained in AB's medical care and had forgotten to take his phone with him. The mother said that she was concerned that this might lead to criticism.

241. I have some difficulty with that explanation since, by giving the account that she did to the father, she was exposing herself to criticism by AB's father and paternal grandmother. The Local Authority says in closing that it leaves it to me to decide whether there was a bike ride at all. Given that I have not heard from the brother and the mother's evidence was truncated, I am not able to reach a definite conclusion about whether the brother did take AB for a bike ride but, on balance, I think that he did take AB on the ride and the mother was not present at that stage. If he did, and AB went out for exercise on a hot day with someone who was not trained in diabetes, did not have any equipment to deal with it, did not deal with it other than carrying AB home and did not have his phone with him, that all adds to the lack of care that was shown to AB that day.

242. In oral evidence the mother said that she could remember when her brother brought AB in. She said that she thought that AB would have been unconscious for '*some minutes, possibly as many as four'*. I consider that to be an under-estimation – AB collapsed on a bike ride, a passer-by helped, water was splashed on his face, the brother carried him home, she lay him down on the sofa and then he revived. That, to my mind, is unlikely to have been fitted into four minutes.

243. She said that she lay him down on the sofa and said: '*I don't think that he was unconscious. I did not phone 999 because he ate the jelly babies. My brother said that his blood sugar was 1…something. The 1.3 came from my brother. I think that he scanned him.'* I find that AB was unconscious. Not only on the basis of what the mother said at the time but also on the basis of his blood glucose levels, which I refer to shortly.

244. In her statement MGM says [para 15]*: ‘The only times I recall the Mother saying AB’s consciousness had been impacted during a hypo, was the time AB went out on his bike with her brother during a heatwave and once in her car. On the bike incident, the Mother told me that the brother said AB fell of his bike because he went unconscious. I can’t recall the specific word used to describe AB’s state but it was something that gave the impression that he had momentarily lost consciousness whilst on a bike ride. The Mother phoned me afterwards to tell me about the bad hypos and sent me a photo of him sat on the sofa looking clammy and pale. She said he had come up but that she had been really scared and worried. I reassured her by saying she had “done the right thing, you’ve got his levels back up, he is sat indoors and you’ve given him water”. I said to call the nurses if she was worried about him again.’*

245. At I4352 there is a note made by JM at 12:20 hrs on 15th June 2021. It reads: ‘*On Sunday 13th June AB was* <u>found</u> [my emphasis] *laying on the sofa and Mum could not rouse him for 60 seconds. His eyes were rolling. Mum shouted and shook him and he was rousable enough to eat jelly babies. His BSL was 1.3 at the time*’. That, therefore, is a third account in which the mother says that AB was ‘found’ on the sofa.

246. I now want to consider the blood glucose levels relating to that day. The Diasend records are at DM-I27. They show that, at 10:00 hrs he was slightly hypoglycaemic, with a reading of 3.9. the next reading, at 14:00, is 2.3. At 16:00 hrs there is a reading of 5.7. The LibreView readings are informative. They are at DM-I963. They show that AB was scanned (the white circles on the chart) at about 10:30 a.m. and was slightly hypoglycaemic (3.8 and 3.7). They show an increase in his levels at lunchtime (as would be expected). They then show his blood glucose levels dropping with a scan at about 13:15 registering a reading of 9.2 and then a reading of 2.9 at about 14:15. There is then a scan at about 15:30 hrs which registers 12.6 and another scan at 16:15 which shows a reading of 3.6. Unexplained is the gap in the readings between 14:15 and 15:30 hrs (see the chart). In his oral evidence, Professor Hindmarsh said: ‘to get unconscious you are getting down to 2 – 2.6 mmols/l.’

247. I had anticipated that the gap in the LibreView readings might be explained by the brother not having the scanner with him on the bike ride. If that is what occurred that would have been serious, of itself. However, that is not the evidence. The evidence of the mother is that, when he returned from the bike ride: ‘*I checked his bloods at 2:24pm (according to the Diasend finger prick log) and he was hypo with a reading of 2.3.’*

248. There is no doubt that the mother’s clear evidence was that AB’s reading dropped to 1.3 that afternoon, not just 2.3. That was not a mistake in her figures but was her clear evidence. That being so, it means that, having scanned him at 2.9 and having tested him by the Diasend system at 2.3, AB then dropped a further 1 mmol/l. At 1.3 mmol/l AB would have been very seriously unwell and that reading would mean that there is every reason to think that he would have been unconscious. Even if the reading was 2.3 mmol/l, that is well within the level where unconsciousness would be likely to occur, on Professor Hindmarsh’s evidence.

249. Dr Hindmarsh said in oral evidence that ‘*at 2.9 you would be pale, sweaty, clammy, your heart rate would be increased. AB would be irritable and, perhaps, irrational.*

His response to parents would be minimal and he would be feeling rather anxious… For a child of AB's age it would be the parent who would usually pick up on this, as there would be clear signals that something was happening. If the levels continued to go down you would expect a child to collapse and become unconscious at about 2.0 mmols /l.'

250. The mother was asked whether she had reduced his insulin before he went out for a bike ride and she replied: *Oh god, uhm, I can't remember, I don't wanna say, you know, if I did, I didn't, if I genuinely can't remember.'*

251. Given the number of different accounts and the findings that I have made, I agree with Mr Goodwin QC that I have to apply the Lucas direction to this part of her evidence. Why did she give different accounts? The answer is because she knows that AB was in a very serious condition that day whilst in her primary care. He should never have got into that condition. She should have sought medical attention for him.

252. I have considered whether I can make clear findings as to how AB got into this state that day. I do not accept that this can all be put down to a short bike ride on a hot day, even though that probably did play a part in what occurred. It is possible that AB's insulin was not delivered early enough before his lunch. It is possible that he was given an additional shot of insulin before he went out on the ride and that led to stacking. It is possible that carb counting was wrong that day. However, given the state of the evidence and, recollecting the direction that I must not go further in findings than the evidence permits, I cannot determine what led to this beyond the fact that it resulted from a lack of care and that lack of care caused him significant harm (i.e. unconsciousness and the risk of worse).

253. I am able to say beyond any doubt that the mother's actions that day were not *intended* to cause AB harm. In the wording of section 31 (2) of the 1989 Act I find that AB suffered significant harm on that day and that the harm was attributable to the care given to him, not being what it would be reasonable to expect a parent to give to him. Having thought very carefully about that finding, I make it with confidence.

254. I also find that, given the state that AB was in and in accordance with the care plan, the mother should have called for medical assistance, by ambulance if necessary. This was a Sunday and I understand Professor Hindmarsh's view that it may have been difficult for her on a non-working day. But I do not accept that it was justified for the mother to wait and see what happened on the strength of her own intervention alone. This was an emergency and it is pure chance that it did not get worse.

255. **On 14th June 2021** the mother says that she dropped AB off at school at 8:30 a.m. and as she did so his Libre went off so she did a finger-prick test. It showed that his blood sugar levels were 1.9. Her statement at C179 goes on to say: '*Whilst we were in the reception area, he was a bit spaced out. Ms W, the receptionist, was also there (back then it was Ms W who was trained up to do his insulin). I had forgotten to pack jelly babies so my brother had to drive over and drop them off. We only lived 5 minutes away, so it didn't take him long to get to us. At 9:03am, he was 6.4, which was within range. A mutual decision was made that AB should not be in school that day, so he came home with me.'*

256. The headteacher gives an account of the events of that morning at C67 – AB was very pale and sweaty and her brother brought in supplies after she had rung him. AB seemed to be having a hypo and sought help appropriately leading to the school giving him chocolate before the decision was made that he should not remain at school [C67].

257. The mother goes on to say: '*after some Jelly babies, it returned to 6.4 but he then had three hypo's between 2:00 and 5:00 PM'* [C179]. The LibreView chart is at DM-J964 and shows that AB's blood glucose levels were low for most of the time from about 10:30 a.m. until 20:00 hrs. The LibreView readings went down to 2.9 on four occasions. The mother was scanning him frequently during the day and so would have been aware of what was happening. The Diasend readings are at DM-I27 and show the reading of 1.9 mmol/l (i.e. seriously low) at 09:00 hrs and less significant hypos in the afternoon (3.1 to 3.7).

258. At paragraph 41 of their submissions, counsel for the Local Authority say: '*On 14th June 2021 the mother texted her brothers partner and reported*: '*his eyes were rolling to the back of his head. [The partner replied Fucking hell… mate do you think you should get him checked over. Did you end up speaking to the nurse today?] …I tried ringing someone tried ringing back. I missed by a minute. Just had answer phone all fucking day.*' The Local Authority says: '*the mother did not speak to anyone in the diabetes team on the 14th, nor did she call an ambulance'.* The mother's counsel set out their account of the evidence that day at paragraphs 58 to 60 of their submissions. The mother says in her replies to the Local Authority schedule, amongst other things, that the mother received a call back from JM on 15 June 2021 [I4352-I4353]'. Thus, they say, the mother did try to contact the nursing team on 14th.

259. I note that the guardian does not suggest that findings should be made in relation to this date and, also, that this date is not specifically pleaded in the Local Authority's schedule. This day having been raised before me, I do consider that the events of that day are consistent with my opinion that, by this stage, the mother was not coping adequately with the management of AB's diabetes. A reading of 1.9 mmol/l is seriously low (see the glossary for the symptoms that he would be likely to show). The events of 14th June have to be considered in context, and I do so.

260. In the afternoon he had a sustained hypo which would be expected to lead to the symptoms set out in the glossary. Even if a prolonged hypo like this may lead to a masking of symptoms, it would signal that glucose was not being transported into his body's cells for that period and I would expect him to be very tired and limp, at least. I do not accept that the mother's description of AB having his eyes '*rolling to the back of his head'* was an exaggeration – that is what she witnessed and that is why she said it to her brothers partner (i.e. not to the man that she had met online).

261. On 15th June 2021 the mother says at C180 that AB had another hypo when she dropped him off at school. His blood sugar levels were 2.7 and 2.3. The school CPOMS records describe him as being '*very pale and seemed a little lethargic / floppy. He said that his legs felt weak'* C68. The first entry was VP, the second was Ms W (the headteacher said in evidence). The school asked the mother to take AB home and she did so. The mother said that she could not understand AB's hypo as he was 'above 7 before leaving for school'. By the time he left school to return home, his levels had stabilised [C68 – the evidence of the school].

262. The LibreView graph is at DM-J964. It shows that AB remain hypoglycaemic for most of the day from about 10:15 until 20:00 hrs. His levels dropped to 2.9 on four occasions.

263. The mother says at C180: *'I had a telephone conversation with JM, diabetes nurse, on 15th June 2021 at 12:20pm [I4353]. I explained that AB was having moderate to severe hypos and how difficult the past few days had been. That discussion records that "Mum mentioned a few times that she didn't want to be admitted to hospital and I have some concerns she is a managing AB at home during times when she might need to come to hospital due to fear of being admitted. I discussed this with Mum and asked that any time she can't wake AB, she must call 999 immediately" [I4353]…I agree that by then I had developed anxiety around returning to hospital as I knew at home, I had the support of my mum whereas in hospital, due to Covid, she was not permitted to stay and help. Saying this, it is clear from the number of hospital admissions and medical records, that I never prevented AB from going to hospital and always sought guidance from the diabetes team or at A & E when it seemed appropriate.'*

264. At I4353 JM (PDSN) recorded: '*T call to mum, prompted by Mum calling out of hours advise overnight. AB having multiple hypos. Mum describes these as moderate to severe. On Sunday 13th June AB was found laying on the sofa and Mum could not rouse him for approx. 60 seconds. His eyes were rolling. Mum shouted/shook him and he was then rousable enough to eat jelly babies. His BG was 1.3mmol at this time and continued to be low for some hours after. On Monday 14th June AB woke at 10.8 but was hypo at 3.8 on arrival at school. Mum reports his eyes were rolling back and he was lethargic but did consume jelly babies which took him up to 9.2, Shortly afterwards he was 3.8mmol again and had further mild hypos that evening. Today he woke at 9.7 but was 2.7 on arrival to school. Mum describes AB as not being rousable for some time with eyes rolling and slumped on mums shoulder. He then 'woke up' and was able to have some jelly babies. Discussed with Mum the use of glucogel and told her to keep on her at all times. Also discussed calling 999 if she is not able to rouse AB. Mum mentioned a few times that she didn't want to be admitted to hospital and I have some concerns she is a managing AB at home during times when she might need to come to hospital due to fear of being admitted. I discussed this with Mum and asked that any time she can't wake AB, she must call 999 immediately. T call to school to clarify events that mum describes. Spoke with Mrs W who works in school office and was with AB and Mum during the hypos today and yesterday morning. She reports slightly different events than Mum. According to Mrs W, Mum walked through the gates yesterday saying AB had a BG level of 1.0. She appeared panicked and told staff she had already given him a sweet. G said he looked pale but was not asleep/unrousable. Mum told school staff that he had had a really bad hypo on Sunday and she couldn't wake him so she threw water on him. This morning on walking into school Mum told school staff that his levels were ok. School staff asked Mum to recheck and stay until this had been done. G reports that his level was 2 and he was acting quite 'peculiar' which G thought was mainly behavioural. She did not see him asleep/lethargic or eyes rolling. G report's mum was saying to AB "stay with me, stay with me" which she felt was unnecessary given how AB was looking but did state that she is not a nurse and could have mis-read what was happening. School are really concerned about having AB back. They feel his diabetes is not currently managed well enough for him to safely attend. I discussed with them that it would be totally normal*

for someone with type 1 diabetes to have 3-5 hypos a week and for these to be easily treated and for the child to be able to stay in school during this. I did agree that currently AB's diabetes is very difficult to manage and that I will discuss this with his PDSN and consultant to see how we can better support AB and school. G wanted to know if AB will be back to school tomorrow and reported to feeling nervous about this. I thought that perhaps given he has had three days of potentially severe hypos he would be feeling tired and run down and that it would be good for him to recuperate at home tomorrow. Will call Mum to discuss.'

265. AB was admitted to hospital that afternoon (probably at about 15:51 – I2807 and not, as first thought, at 20:04 - I2839. He was discharged the next day having been seen by Dr G.

266. Whilst with AB in hospital, the mother sent some text messages. At 17:50 [EM 221] the mother sent texts to C (a friend) saying: '*sorry babe, ABs back in hospital…Keeps going unconscious…and not breathing [C asks: Fuck me, that's not good mate. Is it cus the heat?'] Don't know as he's in hypos when it happens.* The mother was asked in evidence by reference to this text whether AB did keep going unconscious; she said that he was having '*hypos and it was hard to rouse him. I don't remember that there as a time when he stopped breathing…I don't remember. I don't know why I did not ring 999 that day*.'

267. Then, at 18:27 EW sends a text message [EM221]: '*are you OK? What's happened to AB? We just seen your status? Is he OK?'* The mother responds [EM-222] by saying: '*he keeps going unconscious when going hypo which isn't normal for him.'*

268. Then at 20:59, the mother received a message from GM [E222] and replied: '*ABs losing consciousness during hypos so his consultant was worried with everything that's happened with AB as he's not a normal diabetic….horrible to watch him go fine one minute and then blue the next.''*

269. When asked in evidence about these messages and her use of the word 'unconscious', she said: '*I have used the wrong term. I should have said 'drowsy'. I was not deliberately exaggerating. I did not get pleasure from his illness. I am not an attention seeker.'*

270. The Local Authority's closing submission at paragraph 50 was: '*AB's levels were being monitored by the Libre on 15 June and the preceding days [LB J963-4]. The lowest Libre reading for 13-15 June 2021 is 2.9. The mother's account of multiple unconscious episodes during this period does not correspond with the descriptions of the deterioration in presentation which Professor Hindmarsh set out for the court in his evidence. In the event that the Libre records do not show the full picture and AB was falling unconscious, she failed to call ambulances on numerous occasions and failed to report these episodes to the diabetes team. In the event that the Libre records are accurate and the court determines it is more likely than not that AB was conscious, the mother has exaggerated her account of AB's presentation to different people. Both scenarios are extremely serious*'.

271. The guardian contends that the events of this day show that the mother culpably neglected AB's diabetic treatment and care by mismanaging it and 'exposed AB to the risk of significant harm' by not calling an ambulance.

272. The mother's counsel make submissions about this day at paragraphs 61-65 of their submissions. The last paragraph relates to the 13th to 15th June 2021 and states: '*We invite the court to draw the following points from an analysis of these three days in June. First, there is no evidence of a propensity to exaggerate to professionals. Second, there is no evidence that her messages led to or influenced unnecessary hospital assessment or treatment of AB. Third, at the very most, they demonstrate that the mother used the lability of AB's presentation as an entrée to a conversation at a point in her life where she had little else to talk about. The transformation of these messages into material probative of FII is not made out.'*

273. I have already stated my findings about the 13th and 14th June. As to the messages that were sent on 15th June and with all the caution that has to be shown about the interpretation of text messages, I do not accept that the mother used the word 'unconscious' mistakenly. I have found that AB *was* unconscious on 13th June 2021. I think it highly unlikely that he was unconscious on 14th June but I have made findings that the mother did see his eyes rolling to the back of his head and that he was tired and probably limp. On 15th June 2021 the sustained hypo must have affected him and I accept that he was drowsy and find that it is probable that he would have been showing all of the other symptoms stated by Professor Hindmarsh for a child who has a reading of 2.9 (see the glossary – sweaty, clammy, cognitive function reduced, hungry etc).

274. My findings about the 15th June are these:

    i) The mother did not manage the care of AB's diabetes to the standard of a reasonable parent.

    ii) AB suffered the harm of a sustained hypo as a result.

    iii) It is not possible to identify the reasons for that sustained hypo. I note that there was no marked lift in his blood glucose levels at lunchtime which suggests that diet played a part in what occurred.

    iv) The messages that the mother sent that day were exaggerated. I do not accept that they influenced AB's care by the medics or other professionals. I do find that they were sent by the mother to people that she knew in an attempt to attract sympathy (and that they did achieve that end). I find the underlying reason for these exaggerated texts was that the mother was finding it very difficult to cope and sought comfort from others through exaggeration. They were not an attempt by the mother to procure more invasive or extensive treatment for AB.

275. The discharge summary on 16th June 2021 is at I2839 and includes: '*His insulin doses were reduced and his Libre was reviewed. Dr G discussed the possibility of having a pump with Humulin S but decided to continue with the basal bolus regime. His carbohydrate ratios were altered to 1:25g for breakfast, 1:60g for lunch and 1:30 for dinner'* [I2839].

276. AB was discharged in a new regime which was [I2839]:

i) Insulin soluble human [Humulin S] 100units/1mL (Cartridge) injection solution, 1 unit in the morning everyday (give 1 unit with 25g carbs - may change with PDSN advice);

ii) Insulin soluble human [Humulin S] 100units/1mL (Cartridge) injection solution. 1 unit once a day at 12:00 every day (give 1 unit for every 60g carbs at lunch – may alter with PDSN advice);

iii) Insulin soluble human [Humulin S] 100units/1mL (Cartridge) injection solution, 1 unit every day at 18:00 every day (give 1 unit every 30g carbs- may alter with PDSN advice);

iv) Insulin isophane human [Insulatard] 100units/1mL (Cartridge) injection suspension, 3 units at night every day (dose may alter with PDSN advice).

277. The mother says at C181: '*Having had sight of the medical records, I can see that the concern that "FII" might be an issue was first mentioned on 16th June 2021 [I2673]. No one asked me if I was deliberately giving AB insulin inappropriately. None of the doctors asked me if I might be implementing the treatment plans incorrectly. I find it upsetting to learn of this, because I know that I was genuinely doing my best to do it all properly. All I ever did is try to do my best for AB'.* I wish to make two points about that passage:

i) It is important, when reading the medical evidence from those who treated AB to recollect that this case was advanced by the Local Authority and hospital, initially, as one in which the mother was suspected of chronic and wrongful administration of insulin and the suspicion of that was present from at least that date (although there is other evidence that it was certainly on the radar from earlier than this). Care has to be taken when reading some of the evidence that was filed at a time when that thesis was being advanced. It is not the case that is being argued. The opinion evidence from some of the treating team of *chronic* and wrongful administration of insulin is not being relied upon. It is not consistent with the evidence of Professor Hindmarsh.

ii) I am sure that the mother does feel, genuinely, that she was doing her best. On what I have found in relation to this 6½ week period up to 29th July 2021, it was too much for her to manage. The harmful consequences of that for AB are clear.

278. I give an immediate example of that from the next day. On 17th June 2021 the mother says that AB was hyperglycaemic at night and then had a hypo in the morning after breakfast [C181]. She called the diabetes team in a state of distress saying that '*they can't go on like this'* [I4351].

279. The LibreView material can be seen at DM-J964; the Diasend material is at DM-I28. There, it can be seen that AB was hyperglycaemic on the night of 16th June (a reading of 19.7). The mother scanned him at 02:30 and 04:30 (i.e. in the middle of the night – another example of why she must have been exhausted). His levels were dropping towards the normal, grey zone [DM-J965]. He became mildly hypoglycaemic by about

10:00 hrs on 17th June (3.5 and 3.6). The Diasend material shows his reading as 2.7 (11:00 a.m.), 3.6 (12:00) and 3.1 (14:00) before his levels stabilised overnight. The next day [18th] there are seven hypoglycaemic readings of between 3.0 and 3.7 (the more accurate Diasend material shows 2.6 and 2.8 that morning); his levels did not rise much at breakfast time, did rise a bit at lunchtime before he became moderately hyperglycaemic overnight. On 19th June there was a long period of nearly constant hypoglycaemia from 16:00 to just after midnight [DM-J966]. The Diasend material for 19th June shows hypos of 2.8, 3.8, 2.5, 2.6.2.4 and 2.1. That led to his next period of hospitalisation. However much repeated hypos may diminish the visible effect of low blood glucose levels, for AB this must have been a distressing and disorientating time in which he would have felt the sort of symptoms that are described in the glossary.

280. On **19th June 2021** AB was re-admitted to hospital late at night [EM-2013] and remained there until 24th June 2021. At E56 Professor Hindmarsh says: '*during that admission the insulin pump therapy was recommenced.'* Again, taking stock of the overall position, this was the fifth admission into hospital since 10th March 2021. It has to be put into the context of the history that I have already set out.

281. At about 18:00 hrs (before his admission) the mother was texting her brothers partner again. At EM-2009, she said to her: '*AB just had a really scary episode. Think it even shook Dad and my brother up…he wouldn't respond…I was shining lights in his eyes, pupils didn't even move.*' She told her that she was petrified to sleep and that, if she did fall asleep AB would '*of fell into a coma'* [EM-2010]. She was saying that she would set an alarm every two hours, leading the partner to say '*bet you don't give a shit about sleep right now*.' At about 19:00 hrs she says that AB had just '*had another one…eyes closed shut*.'

282. With hypos of 2.5 and 2.6 (DM-I28) and a day as shown at DM-966, I think it inevitable that AB would have been reacting to his low blood glucose levels. I do not think it remotely likely that his '*pupils did not move'* if a light was shone in them. The mother said in oral evidence that she cannot remember whether she shone lights in his eyes; I think that highly unlikely. Again, I do think that this was an exaggerated account given by the mother to describe a child who would have been in a poor condition, probably limp, clammy, sweaty, hungry and disorientated. Again, this text exchange did not impact on AB's care. Further, it has to be observed that the mother *did* take AB into hospital that night and, therefore did seek medical care. On the information that I have (and finding as I do that he was not in the extreme condition suggested by the mother in the text messages) I do not think that the mother should be criticised for not taking him in earlier. I do not think that anything turns on this text message beyond what I have said.

283. I do note that, on arrival at hospital, his blood glucose readings was 1.7 at 10:30 p.m. [C182]. That, again, is a seriously low reading (see the definition of hypoglycaemia in the glossary – 'as you decline into the 1's you get loss of consciousness) that arose in relation to AB (aged still 5) at a time when he was in the mother's primary care.

284. Dr G says at SB-C52: *'AB was again admitted on 19th June 2021 with recurrent episodes of low blood glucose levels, some of which were as low as 1.7 mmol/L despite being on very small doses of insulin (1 unit of Insulatard and 1 unit of Actrapid with meals). Following this, his subcutaneous Insulin was stopped and then a decision was*

made to try to deliver insulin via an insulin pump containing Humulin S. AB was commenced on an insulin pump again on 22nd June 2021. After the start of the pump AB's did not have major hypoglycaemic episodes and was discharged home on 24/06/2021 and the blood glucose levels to be by the diabetes nurse specialist team.'

285. On 22nd June 2021 AB was put back on a Medtronic insulin pump with Humulin S insulin [C183]. At 22:40 he had a hypo when his blood sugar level dropped below 4. The mother says that there were a number of occasions when she had to leave the room as she found it upsetting to see him being forced to have Glucogel. She says that, sometimes, he had to be pinned down by the nurses [C183]. She describes how difficult his behaviour was during this admission [C183]. Again, that is another reminder of the impact of this history on AB and also the sort of demands that the mother must also have been facing on a daily basis when she was caring for AB at home.

286. In the Local Authority's submission, I was referred to the fact that the mother sent a text message to another man, called J. At 19.51 [EM E124] the mother texted: *"I've been in a hospital for 4 months"*. Again, says the Local Authority, this was an exaggeration. Again, strictly speaking, the Local Authority is correct. She might have said, more accurately, that they had been in and out of hospital for the past 3½ months. But nothing turns on that text message at all, in my opinion, even when taken in association with other texts.

287. On 23rd June 2021, Nurse S says that she had a discussion with Dr G. At SB-C25 she says that she discussed '*my concerns about AB in relation to : the frequent hospital admissions with unstable blood glucose levels with no obvious cause or explanation, continued difficulty in managing AB's diabetes safety, AB having missed so much of his schooling, use of a baby pushchair and baby bottle despite AB being nearly six years old. At this point, Dr G advised I discussed with our trust safeguarding team. On 23rd June we had a professionals meeting with our safeguarding lead doctor WC to discuss this complex perplexing presentation of AB's diabetes management. At this time doctor WC did not feel there was evidence to suggest that there was fabrication.'*

288. A safeguarding meeting took place in the hospital that day. At I3041 there is the summary which reflected Dr G's then views and reads:

'*The cause for a rapid drop in blood sugar is the administering of too much insulin. Although there are concerns, there is no evidence of any sinister administration of insulin or deliberate interfering with the child's insulin to manufacture symptoms. There are unexplained hypos with no detectable insulin. The concerns are that blood sugars are dropping from 15 to 2.2 on a fairly constant basis. The hypos resolve but then he returns with the same story. During the last few days in hospital, his blood sugars have been on the higher side. There have been lots of changes to medication, but the requests or instructions to mum are fairly complex and there are no concerns regarding mum's level of understanding. Mum is fully engaging with appointments and is always available for telephone calls and answers appropriately. There is no community paediatrician currently involved with the family as a previous referral from their GP was rejected. Community paediatrics would be able to liaise with school and mum. School have witnessed AB going low quickly, usually at the beginning of the day*

and are concerned. School have previously had appropriate training. There has been no period of enhanced observation tool being used as he is on pump currently .'

289. In oral evidence Dr G said that the above represented his then opinion about sinister administration of insulin, although it was 'on his radar' and had been for the past few weeks. He said: '*I would have communicated this to the nursing and medical teams. People would have been having their eyes and ears open about something sinister going on. At no point did anyone suggest that they had seen the mother acting in any suspicious way that might have led to enquiries. This was a busy ward. With a patient such as AB nurses would have been coming to the bed regularly to carry out checks – depends on how 'regular is regular'. No one complained that the mother had injected him when she should not or anything like that'*.

290. In his evidence, Dr B said that he was aware of Dr G's views but there were subsequent meetings where different views were expressed. He said that '*the* '*absence of evidence' does not mean that it did not happen. I came to different conclusions when I looked at the information when I wrote the report'* [i.e. at E1]. Those conclusions have not survived this hearing and the evidence of Professor Hindmarsh save in relation to 28th July and the qualified evidence relating to the 24th July.

291. The plan that was then made was expressed to be: '*1. If re-admitted, consistency from same consultant and specialist nurse where possible. 2. Enhanced observation tool to be used with an explanation to mum that the monitoring is in order to stabilise him and ensure he is safe at home. 3. DG (Dr G) and HS (Nurse S) To have an initial discussion with mum on 24th June a) to explain there is a team around her to support her, with the aim to get him stable and back in school. b) To clarify what mums anxieties are regarding school. c) To revisit the instructions with mum, reinforcing the message to call ambulance etc, d) to clarify expectations of school. 4. DG 2 review sugars 24th June 2021 - plan to discharge before the end of the week for his birthday and holiday. 5. DG To refer to community paediatrics for them to address buggy / baby bottle etc. 6. DG / HS to decide if guardian two would be useful and needs to be ordered*'.

292. On 24th June 2021, Nurse S says that she met with the mother to re-assess the insulin pump competencies for the Medtronic pump which AB had commenced [SB-C23]. She says that the mother demonstrated good knowledge of the use of the pump. The nursing record of the meeting with the mother is at I2902. The note records that there was also a discussion between Nurse S and the mother about the arrangements that would be put in place for AB's diabetic care when he was in Cornwall. It includes: '*I asked that Mum ensures she has glucogen injection, ample supply of ketone strips, glucogel hypo treatments as well as pen filled short and long acting insulin… Reinforced message that if Mum concerned about semi-conscious hypoglycaemia to call 999. If high blood glucose levels and ketones 0.6 or more, to call PDSN's / out of hours service for advice.' Nurse S said that the mother was anxious because AB had not been stable for long and was 'desperate to get home.'*

293. On 26th June 2021 AB went to St Ives on holiday with the mother and the maternal family [C184]. The grandparents, mother, AB and her brother stayed in one caravan and D stayed in the other with his family. In her police interview at SB-H24 the mother

said that they wanted to take AB away for his birthday (27th June) – '*and that was like my goal, I just wanted to take him away for his birthday'*.

294. The Local Authority's allegation is: '*On occasions during the week commencing 26th June 2021, whilst on holiday in St Ives, AB's mother allowed him to remain disconnected from his insulin pump for periods longer than those recommended by his diabetes medical team "as he was having such a good time going in and out of the sea. AB had to be admitted to hospital immediately on return home (late on 3rd July) and, as a consequence of his mother's failure to monitor and meet his need for insulin, was hyperglycaemic.'* The Local Authority schedule cites the statement by the mother [C:180-181] and pages I3307 and I4343.

295. At C180 the mother says:

'*We went on holiday to St Ives on Saturday 26th June 2021 for one week. We had a lovely time and tried to make it as fun as possible, despite AB's blood sugar levels, which were high throughout. If he wanted to go swimming, the pump had to be fully disconnected which meant he wasn't receiving any insulin; this was a worry to me. It had been agreed with the diabetes team that for a half hour window each day, he could be off the pump so that he could go swimming. On some days, he was off the pump for longer as he was having such a good time, going in and out of the sea. I noticed how his ketones would rise very quickly during those times that he wasn't receiving any insulin. As he was high already, it would happen at a surprisingly quick rate. I spoke to the diabetes team almost every day and sent them the pump data and Freestyle Libre data most days as requested. I was struggling to download the Medtronic insulin data but managed to get some reports over to the team. I had issues logging into Care Link, as did the diabetes team [I4347]*'.

296. In her statement at paragraph 24, MGM says [para 24 – SB-C88]: '*We went on holiday to St Ives in June 2021. He was on the pump then. That was a really tough holiday for the Mother; she was supposed to be on holiday but ended up being on the phone to the nurses every day and at the laptop uploading data for the nurses. The Mother would get upset as she just wanted AB to have a really nice, normal time. She was constantly checking his levels. AB had a croupy cough whilst on holiday and ended up spending a day in the caravan as he was unwell. I presume that would have contributed to his levels. The Mother had bought AB a special diabetic cake for him as it was his birthday, but he didn't like it. It didn't taste very nice. He didn't have a "treat treat" on holiday because his levels were so high. I could see the Mother trying to make sure he had a good time, trying to follow all of the advice from the nurses and just doing her best.'*

297. In oral evidence, MGM said that she was not aware that the mother had kept AB off the pump for more than 30 minutes during the holiday. She said that the mother used the pump competently as far as she was aware. This, once again signals to me that, despite the closeness of this family, there are aspects of the mother's life and behaviour of which her parents are unaware; perhaps that would be hardly surprising for a mother in her 20's in relation to an issue that was not of such importance. The pump was central to AB's care at the time and I am surprised that the family, as a whole, was not aware of how and when it was being used.

298. In oral evidence Professor Hindmarsh was taken to the Libre View charts [J999] and said: '*you can't go swimming whilst connected to a pump. These charts show figures that are consistently high, at times, well off the scale. There is an obvious problem with the amount of insulin that is being delivered. We would only advise that you can go for a whole hour off the pump as long as there are checks. One of the striking things here is that, overnight, you would expect the BGL to be in range but it was not. With readings in the mid 20's, AB would have been irritable, seeking out drinks and experiencing hunger pain. There would be high levels of glucose in his blood but it would not be getting into cells. His ketone levels on 2nd July are worrying'*. He noted that the ketones levels on that day were worryingly high: 1.4, 2.3, 2.2, 0.6, 0.7, 1.1, 0.8, 0.9, 1.2 [J1001].

299. Having considered it, I would wish to add this point. If you know that your child is seriously and repeatedly hyperglycaemic, you should not take the child off the pump, certainly for more than 30 minutes. The very point of the pump is to deliver insulin. Insulin reduces blood glucose levels. Further, if your child does have croup (a 'barking cough often associated with breathlessness') as AB did on that holiday later on in the week): a) you do not take the child off the pump at a time when he is hyperglycaemic and suffering from an illness that, of itself, may cause his levels to rise and b) you do not allow the child to go swimming. Further, in relation to a diabetic child who is hyperglycaemic and suffering from intercurrent illness, you regulate his diet very carefully. Of course, croup is a common childhood illness and a parent of a diabetic child has to be able to manage the child's blood glucose levels when the child has common illnesses (e.g. colds) and when the child engages in everyday types of exercise.

300. I fully appreciate that, after the miserable time that this mother and AB had (and seeing that it was his birthday) the mother must have been doing her best to give him a good time. But that could not be at the expense of his diabetic care. As it was, his diabetes was not managed adequately with results that are all too plain to see.

301. In her interview at SB-H26, the mother says: '*obviously I liaised with the diabetes team every single day….Once we were on holiday….Just because we were so far away -- not far away, but we were about, you know, three and a bit hours away. I downloaded for them every day when I could, when I had signal… You know, I always made sure it had got to them before, you know, they had finished…And I always rang them, they rang me. I was ringing out of hours if I need to. I would do everything they would ask---…and I would always be led by them. Any decisions wouldn't be made or done without them okaying it.'*

302. I accept that the mother was in contact with the team while she was away although, as the guardian's counsel identifies in the submission that I set out below, some of the information that she was giving them was not correct. But mere contact with the team did and could not of itself regulate his blood glucose levels. The problems with hyperglycaemia were not of the team's making. Further, whatever may be said about the level of contact, the fact is that his blood glucose levels were not managed adequately during this holiday. Taking him off the pump (as the mother says that she did for more than 30 minutes) to let him go into the sea may well have been part of the reason for the pattern of his blood glucose levels that week.

303. The nursing contacts are recorded at I4345. I will refer to some of them as I work though the days of this holiday. There is no Diasend material for this week. The LibreView charts are at DM-J999. They show that on 28th, 29th and 30th June 2021 AB was almost constantly hyperglycaemic. On 1st July 2021 his levels during the day were either within the normal range or closer to it. However at 18:00 on 1st July 2021 he became seriously hyperglycaemic. On 2nd July 2021 he was seriously hyperglycaemic for the whole of the day (the evening reading is 27.8). On Saturday 3rd July 2021 he was seriously hyperglycaemic throughout the day with the readings in the evening being 27.8 for most of six hours. It is important, again, to translate those figures into an image of how AB would have been feeling at the time (see the glossary definition of hyperglycaemia and the evidence of Professor Hindmarsh).

304. The Local Authority closing submission at paragraph 70 states: '*This was clearly a period of time during which the mother was struggling to manage AB and his diabetes. AB was asking for unhealthy snacks, he was wanting to go in and out of the sea and the mother understandably struggled to say no to him whilst on holiday. Whilst perhaps understandable, the impact cannot be understated. AB was placed in a very precarious position. By Friday 2 July, his ketones reached 2.3. There was not a single day during the holiday when he was not hyperglycaemic, often for a prolonged period of time. The mother agreed in cross-examination that if AB's diabetes is not under control that that constitutes a real concern. That does not appear to have deterred her, however, during this holiday where the Libre records clearly show mismanagement.'*

305. The guardian's counsel make this submission about the holiday:

'*The court is invited to review again the LibreView charts from [J999-1001]. It is clear that AB's BGL were not being effectively or consistently managed by M during this period. It is difficult to get any clear picture of exactly what M was doing, save that the following supports the contention that she was culpably neglecting AB's diabetic treatment and care during this period:*

i. *M was reporting that she found it stressful trying to limit unhealthy snacks whilst at St Ives [I4345] and two weeks later she "gave in" and gave "foods that were not good for him" [C189/146], a fact that the MGM was completely unaware of at the time[CLQC-XM]. This supports the contention that M was allowing AB to have unhealthy food that would explain the high BGL, which would then remain high if off the pump for long periods of time.*
ii. *M now accepts that she allowed AB off the pump for longer than the 30 minute period agreed with the diabetic team [C184/125]. The MGM was also unaware of this [CLQC-XM].*
iii. *MGM believed that M was overriding the maximum dose on the pump in consultation with the diabetic nurses [CLQC-XM], which is contradicted by the nursing record of Nurse G that records that it was she that advised the M that she had been overriding the pump on a number of occasions [I4347]. Either way if M was actually inputting the amount of carbohydrates and overriding to give the correct dose this would have brought the BGL down, which it did not. A review of the charts does not appear to support this happening.*

iv. *M's description of having "a lovely time" appears to be at odds with the high BGL and AB's likely presentation which highlights she was most probably prioritising having "fun" above meeting AB's diabetic needs.*

v. *A review of the communication log for the period [I4349-4343] appears to show that it is the diabetes nurses that telephones M in the main and that crucially when she does call on the 30th June , some 5 days into the holiday, <u>she reports "that despite AB having Croup and a temperature, his blood sugar levels have not been hugely elevated and ketones are negative"</u> [I4346]. This appears to directly contradict the recorded levels within the LibreView chart [J1000] and also the M own narrative statement [C185/127]*'.

306. On behalf of the mother, it was submitted in closing that: '*There is no evidence of reckless mismanagement during the week-long St Ives' holiday on 26 June 2021. AB's pump was disconnected in order for him to swim in the sea – Professor Hindmarsh advised that his patients would be told they could go a full hour without being connected. The ketone levels were fine, per Professor Hindmarsh. The mother was uploading the Medtronic pump data to the diabetes team and so they would have been able to identify if any disconnection had been ill-advised. None did.'*

307. I have no difficulty at all in accepting the submissions of the Local Authority and guardian in relation to this holiday. It is highly understandable that, after the wretched months that the mother and AB had spent, the mother wanted to give AB a good holiday at the time of his birthday. It must have been a bitter disappointment (and strain when living in a mobile caravan with her parents and her brother as well), for AB to have had croup and for him to have been as hyperglycaemic as he was (with all the consequent repercussions). I have no difficulty at all in finding that the mother was not managing AB's diabetes adequately or competently during this holiday. I will now say more about some of the individual days of this holiday.

308. The mother says that, during the holiday AB needed much more insulin than the pump was allowing – a maximum dose was set by the pump and to deliver more it was necessary to over-ride it. She says at C185: '*What I mean by this, was if the max daily dose was set to 3, but I inputted the amount of carbohydrates he was about to eat and the pump then calculated that he required 4 units of insulin then, in order to give him 4 units, I would have to override the max dose setting…Nurse G did not tell me that I was wrong to do that but endorsed my decision by advising me to increase the max daily dose setting on my pump.'* If he did need more insulin, then taking him off the pump is even less explicable.

309. On Tuesday 29th June 2021, the mother spoke to Nurse G [I4347]. Nurse G had noticed that AB's readings were high and so advised her to increase the maximum daily dose of insulin allowed via the pump to 3 units. The entries by Nurse G at I4347 were:

i) 15:45 hrs - telephone to mum as unable to see the download but she reports it is done and she can see it. Mum happy to give me her personal username and password but still unable to log in.

ii) 15:53:00 Nurse G, Clinical Note Paediatric Diabetic Medicine Telephone with mum approx. 1200 as unable to see download. mum advised that she had had to

download software yesterday and that AB was currently away from her so unable to do it immediately but would do it as soon as he returned.

iii) Telephone with mum. Unable to link download through care link or to access using mum's username and password. User - …P…Mum has sent a PDF but not enough reports to make accurate changes. Review of Libre shows very high readings therefore agreed to use TBR of 120% from approx. 1900 throughout the night. Mum to cancel or reduce if hypo. Mum to increase Max total daily dose on the pump to 3 units as she advises there has been occasions when the pump has advised more than the current 2 units set. Mum gave the example of his birthday. I advised mum I could see she had overridden the pump advice on a number of occasions and mum felt this was to do with the max dose. PDSN needs to scrutinise the reports regarding overriding. Mum will have another look at linking up the download but I have also requested that she sends a PDF of all of the reports rather than the few she has sent today. Consider discussing with Dr G Maybe change the target range currently set at 10mmols (TBC by reports) Maybe change ISF from 1 to lower 25mmol (TBC by reports).

310. That entry speaks for itself. It does include that it was the nursing team who noticed that the mother had over-ridden the pump (rather than the mother telling them that she was doing so). In oral evidence Nurse G said that she had not documented the mother's reasoning for over-riding the pump but, she said, it seemed reasonable that the mother had done so. There are times when it is appropriate to over-ride the pump, Nurse G said. She thought that the explanation that the mother gave her was 'plausible' but felt that the team needed to keep a close eye on the over-rides. In re-examination she said that there was no scrutiny of the over-ride but the mother's suggestion of a 130% increase for an hour seemed reasonable to her. In her evidence the mother said that she accepted that she had over-ridden the pump without consulting the diabetes team first.

311. I do not think that, faced with that evidence, the mother can be criticised for over-riding the pump in the light of AB's hyperglycaemia. I do think that she should have consulted the team first, but nothing turns on that point. The point, to my mind, is that AB's blood glucose levels were not managed properly during this holiday. The very fact that the mother needed to over-ride the pump in an attempt to bring his blood glucose levels down suggests to me that his levels were not being controlled properly. It is not possible to say what the mother was doing for this to happen. I suspect that it is a combination of him being off the pump for too long, his diet being inadequately controlled, croup and possibly heat and excitement. Those are all things with which a reasonable parent (using section 31 language) should be expected to cope in relation to a diabetic child. This mother did not. I do not accept the oral evidence that she gave that she did not find it stressful managing his diabetes during this holiday.

312. On 30th June 2021, the mother says that AB's ketones 'spiked' (in fact she is wrong about that, according to DM-J1000-1). But, it is about this time that he had a temperature and a croupy cough; she refers to AB having croup at about this stage of the holiday, in her interview at SB-H26. She says that she rang 111 and a prescription was sent to St Ives. From 1st July the ketones were getting higher and she spoke to an on-call doctor at the Hospital who advised her that, if the ketones got to 1.5, she should take AB to Truro Hospital. By Friday morning the ketones were 2.3 which is towards the top end of 'moderately high'. Beyond three is very high.

313. On 1st July 2021 the mother spoke to Nurse S after Nurse S had reviewed the data from the Libre and the pump. The mother was advised to increase the basal rate on the pump and told that they did not need to go to hospital [I4345 and 4346]. I note that, on 1 July 2021 at 15.15, the mother had a telephone call with Nurse S. Nurse S records at [I4345]: "*Telephone call made to mum who reports that they are ok. Mum has found it stressful trying to limit unhealthy snacks for AB while on holiday. Mum reports that AB is ok, he has not required any medication for his Croup. Mum reports all ketones are negative.*" That is not so.

314. The Local Authority referred me to another text. This one was to EW, whose son ('O') was an inpatient in the hospital. In her text exchange, the mother wrote: '*ABs levels are bloody shit lmao skimming hospital by skin of my teeth* □□□□. I do not think anything of forensic value comes from that text. I am grateful for being educated that 'lmao' means 'laugh my arse off'. The emojis are of a laughing face. I do not accept that she was treating AB's condition as a joke. Far from it, I think that she would have been very worried about them and also that it might lead to more hospitalisation and hospital treatment. If instead of laughing faces she had written something old-fashioned like 'phew!', what then?

315. On 2nd July 2021 Nurse G spoke to the mother and recorded at I434: '*Review with mum 1650. BG now 18.9 mmols and ketones are 2.1mmols. Had insulin for evening meal and ate. Mum has given the pen injection as advised and changed the cannula and set. TBR remains at 170%. Discussed with GW who has discussed with TC - consultant. Plan to treat as normal sick day guidelines therefore average total daily dose approx. 15units. 20% of 15units = 3units but 0.5 units already given. Discussed and agreed to give a further 1.5 units. Telephone to mum to advise pen correction of Humulin S of 1.5 units stat. Mum to review Bg and ketones at 1915 and call*'.

316. Despite that intervention the blood glucose levels were very high (often 27.8 at J1001).

317. **On 3rd July 2021** – The mother and AB arrived back and the mother took him into hospital that night. AB presented with vomiting and ketones [I3090 and C185]. By then, on the pump, his average total daily insulin dose was 0.3 units/kg/day and despite readjustments, he returned to injections of insulin on the 8th July. He was discharged home on 10th July 2021. In the early hours of 4th July 2021 (just after his admission) the ketones were 2.6 and 2.7 [DM-J1002].

318. Dr G says at SB-C52: '*AB was again admitted on 3rd July 2021 with concerns about high blood sugar readings (blood glucose levels>30mmol/L) and ketones. This admission involved subsequent increases in his insulin doses through the pump and despite that AB's blood sugars remained high with development of ketones. Following this, the pump was then discontinued and AB was recommenced on subcutaneous insulin injections comprising of Insulatard and Humulin S on 8/7/21. After this AB had fluctuating blood sugars ranging from high blood sugars to low blood sugars despite being on small doses of Insulatard and Humulin S. His insulin dose was reduced and was discharged on 10/7/21*'.

319. As I have said already, it is important to note that, on admission to hospital on 3rd July 2021, it took the hospital five days before AB's blood glucose levels began to come

under control. On the first four days of his admission AB's blood glucose levels were often 27.8 on the LibreView charts [DM-J1002 and C186]. His ketones went up in hospital on 8th July 2021 to 4.7 [DM-J1004]. My take on that is that the hospital was trying to set the correct dosage for his insulin following the period in which his levels had become out of control on the holiday. I do not think that the fact that there were five days in which the hospital struggled to get his diabetes under control diminishes, in any way, what I have said about the management of his diabetes on holiday.

320. On 10th July 2021, AB was discharged from hospital and remained at home until 22nd July 2021. By that stage AB's blood glucose levels had been brought under some control [J1005]. His blood glucose levels remained relatively stable for about three days. By 13th July 2021 there were repeated hypos [DM-J1006]. The mother says that, during this period, he was having '*multiple hypos a day – up to 11 hypos on some days. His lowest blood glucose reading during that period was 2.1'* [C188].

321. At E67, Professor Hindmarsh said: '*From the 10th to 21st July 2021 the Libre glucose sensor download shows numerous episodes of hypoglycaemia during the day and night. The timing of these episodes would be consistent not only with mismatch between short-acting insulin and carbohydrate content of food but also with the action of long-acting insulin.'* The downloads also are entirely consistent with my opinion that the mother was not managing his diabetic care adequately during that period. Certainly, I do not think that, on the facts of the history that I have already set out, there would have been one single cause for what occurred. It was probably a combination of factors such as poor diet, the timing of insulin delivery, poor carb counting, stacking of doses, poor exercise regulation, difficulties with calculation due to dyscalculia, the mother's own state of mind and adjusting to the actions of long-acting insulin.

322. As to the timing of insulin delivery, it appears that, initially, the mother was not giving insulin at the correct time before meals. On 14th July 2021, Nurse S spoke to the mother having reviewed the Diasend and Libre data. Nurse S wrote at I4341: '*Libreview and Diasend reviewed. AB still experiencing overnight hypos, down to 2.4mmol last night. Telephone call made to mum, have suggested that she reduces Insulatard again tonight from 2.5units to 2 units. Pattern of hypos post hyperglycaemia so have suggested that mum changes ISF for all time block from 1u:20mmol to 1u:25mmol. Mum has made this change. Mum has been giving mealtime insulin 10 minutes before meals as that is what the nurses did in hospital. I explained to mum that I had not heard that the 30 mins before food had changed, so have advised mum returns to giving Humulin S mealtime insulin 30 mins before food. Also discussed with mum again about ensuring AB has a BG level of at least 6mmol before going to bed. Mum sure that she gives a bedtime snack as well as a bottle of milk but this does not maintain his BG levels overnight. I have suggested that mum trials different carb snacks for the evening meal to see if that helps to maintain BG levels overnight.'* In written answers to questions the mother said: '*Obviously considering the conversation in that telephone obviously I must have been giving [the pre-meal time insulin] ten minutes like they were doing it in hospital I'm guessing, I assume I then would have then followed Nurse S's advice and started to give it the 30 minutes before.'*

323. In their closing submissions counsel for the Local Authority dedicate six paragraphs to a text message that the mother sent to a man called D. They submitted:

- '*On 14 July 2021, the mother messaged someone called D. In her responses to written questions, the mother stated "I can't remember who D is". At 17.04, the mother wrote to D [EM E128]: "we're speaking to a dietician soon to discuss options of an ng tube being fitted so he can sleep at night and be constantly filled up with milk or cornflower to keep his sugars up x".*

- *The mother could not say why she was messaging D about such personal matters, nor could she recall if there was ever a conversation with a dietician about an NG tube being an option for AB. The medical records do not indicate that it was an option that was ever considered for AB.*

- *Dr G was asked about the need for an NG tube during the course of his evidence:*
  - *LA – Could you tell us whether a nasogastric tube, if fitted into AB, would have an impact upon him and if so, what?*
  - *DG – do not see a reason why such a thing should happen because there were not concerns about his feeding. Do not see a medical reason.*
  - *LA – could you tell the court what the impact of having such a tube on a child like AB would be?*
  - *DG – well first of all, I cannot see a medical indication for a tube to be placed in a child like AB. But I think it were to be placed, it is an invasive form of feeding which otherwise was happening normally.*

- *At the time of the mother's message to D, the mother had another mum friend in hospital, E, whose child had an NG tube fitted. The mother recollects "I think we had conversations about it, but can't remember exactly what the whole conversations were".*
- *The mother was aware of the impact on a child of such an interventionist approach. On 5 July 2021 at 08.19, E text the mother saying [EM E317]: "Sorry about the screaming that's about to happen, we're about to change his tube☹ ".*

- *There is no mention of an NG tube in the papers and Dr G confirmed there was no medical reason for AB to have one. This is a blatant example of attention-seeking behaviour*'.

324. I agree that the mother should not have sent that message. It was not correct. She should not have been speaking to a man she had met online about her son's state of health and should not have been giving an exaggerated account about it. However, both in isolation and when taken with other texts, I consider that this message is irrelevant to the issues that I have to decide, save to the extent of the general points that I made in my initial summary at paragraphs 25 and 26 above. So, too, is the other text to D [EM-217] in which she told him, wrongly, that AB had been in hospital for five months.

325. The fifth allegation on the schedule is that: '*Between 10th and 21st July 2021 AB suffered numerous episodes of hypoglycaemia at home, the timing of which was "consistent not only with mismatch between short-action insulin and carbohydrate content of food but also with the action of long-acting insulin." This was as a result of the mother's failure to manage AB's treatment plans either intentionally or due to a lack of reasonable care.'*

326. The sixth allegation, however, makes specific reference to 15th July 2021 which I will consider now. It states: '*On the dates set out below, the mother failed to call an ambulance when she was reporting AB to be unconscious, not breathing, blue and/or unresponsive in direct contravention of the hypoglycaemia flow chart dated 1st November 2020 and the specific advice of AB's paediatric diabetes specialist nurses: a) 13th June 2021, b) 19th June 2021, c) 15th July 2021.'*

327. On 15th July 2021 (a Thursday), the mother took AB to Brean Sands beach, near Burnham-on-Sea. In her oral evidence the mother said: '*On the way back from the beach I remember his eyes rolling back from what I saw in the wing mirror. I do not think that we stayed on the beach too long. We stayed for about a couple of hours and we went back. I can't remember anything that may have led to it. I can't say why I did not contact the nursing team and I can't say why I did not contact the emergency services.'*

328. At 12.07 that day, the mother sent a text to someone called A, saying [EM-2617]: *"Took AB to the beach hr last 2 hours then blacked out 😭😭 hes okay now he's just really worn out xxxxx".*

329. There is limited reference to this event in the papers, save that the mother says this: [C180]: *'I can't remember the exact date but around that time, I took AB on a trip to Brean beach. He was very active and running around having fun. On the return journey in my car, I noticed in my wing mirror that it looked like his eyes were rolling back in his head. I pulled the car over and checked his levels through a finger prick and he was a hypo. I reported this to the Children's Hospital [I2798].'* The reference to I2798 caused confusion because it relates to 15th June 2021 (not 5th June 2021 as the Local Authority submitted). I agree with counsel for the guardian that there was only one incident at Brean and that the passage in the mother's statement probably relates to it. The date upon which they went to Brean is clear from the text messages (e.g. EM-2610).

330. The mother was asked about this incident in cross examination. However, the questioning of her in relation to it was not complete because she then held up a yellow card to signal that she was having a panic attack and her oral evidence had to end.

331. The guardian submits through counsel: '*The M took AB to Brean beach on the 15th July 2021 and reported that after 2 hours he "blacked out" [E2610, E2617, E2618]. No ambulance was called and no reporting to the diabetes team occurred. This, on balance, represented a serious and significant episode of mismanagement in that AB passed through the stages described by Professor Hindmarsh before being rendered unconscious without M seemingly taking any adequate steps to address his deterioration.'*

332. Professor Hindmarsh was asked to look at the Libre values for 15 July [DM-J1006]. Mr BB asked: '*Looking at those values, would you expect him to black out or pass out as a result of any of those values?'* Professor Hindmarsh answered "*on 15 July, no*." The Diasend material for that morning shows the only hypoglycaemic episode to have been one of 3.7 mmol/l. The LibreView material shows the lowest hypo to have been 3.1 that morning.

333. In my opinion there is insufficient material in relation to this day to draw any conclusions that might be adverse to this mother. I very much doubt that AB was unconscious that day. His blood glucose levels increased immediately after the 3.1 reading and remained, for the most part, in the grey zone [DM-J1006]. In fact, this was a relatively stable day as shown in that chart. I accept that he may have been tired and mildly hypoglycaemic after playing on the beach. On this occasion, I do not see any reason for the mother to have taken him to hospital or to have summonsed an ambulance (in any event, she was in a car herself and could have driven him to hospital more quickly if necessary). I can only imagine that, with the readings at DM-J1006, if he had turned up at A and E they would have asked 'what are you doing here?' By the time that he arrived at hospital and was seen by anyone, his levels would have been normal (as shown on the chart). Whatever did happen on the journey back from Brean, it appears that he picked up for the rest of the day. I suspect that mother was exaggerating the text to A but I do not consider that has any relevance to the issues before me.

334. Therefore, I make no findings adverse to the mother in relation to this date.

335. **Heatwave week – 16th July 2021 (Friday) - 22nd July 2021 -** The chronology now moves on to the week that was referred to at times as the 'heatwave week' during the hearing.

336. The mother says at C189: '*from 16th July, he was hypo-ing really frequently and I was struggling to keep his blood sugar levels up. I believe that it might have been a combination of the intensely hot weather and the fact that his body was adjusting to the new subcutaneous injections that made this period particularly challenging. It is during this period that I started to give AB foods that were not good for him, but which brought his blood glucose up quickly. I was giving him Magnum ice-creams, crisps and chocolate bars in an attempt to being his levels up. It was such a difficult week and I recall feeing like I was running out of options as he wasn't accepting his usual treatment (a digestive biscuit) and he kept getting low repeatedly. It was also a catch 22 situation, because when he got upset about the prospect of having to eat another digestive biscuit and I was refusing to give him something that he wanted to eat like an ice-cream or crisps, his blood sugar levels would drop because he was so upset. I admit that during that week, I gave in and wasn't disciplined with his diet, but it was out of pure desperation. I barely slept that week because I was so stressed out by his levels….*[para 149 at C190]…*In terms of the ice-cream and chocolate bars that I gave AB during that period, I did not include them in the carb count as I counted them as snacks and snacks were allowed without insulin, so long as it didn't exceed 10-15 grams of carbohydrates. During the hot period, he was less interested in eating lunch hence why he had to have so many snacks. He was always good at eating breakfast but, because he was having so many snacks in the lead up to lunch, by the time that it came to lunch, he wasn't very hungry. I think that dinners were OK, it was mainly lunch which was the problem.*'

337. Thus the mother was exhausted and giving AB the wrong type of foods. The result was inevitable. Rather than her giving in, I find that she gave up on trying to regulate his blood glucose levels adequately.

338. In oral evidence the mother said: '*There was a period in July when I was giving him more Magnums and crisps than I should have done. I tried to keep his levels up. I asked the nurses and they upped his carbs to 10 or 15 so that he could have a bigger snack to keep his levels up. It was not working. I did not want to keep him inside so that he could play. I was in a mess. He would have an ice-cream as a dessert – mini magnums – 12 gms of carb, I believe. H would have crisps, I know that it is not a great choice of snacks to give him…I was struggling and did not know what to do.'*

339. Not only would that diet mean that his blood glucose levels would be very difficult to regulate but it also meant that it was difficult for the mother to give him insulin at the right time – for instance, before meals. How does a parent time the giving of insulin to prevent spikes and troughs when a child is living off snacks and not eating his lunch? The LibreView material for this week speaks for itself. There were many long periods of hypoglycaemia and it can be seen that, for instance on 19th and 20th July, the mother was scanning him frequently, so she must have been aware of his blood glucose levels [DM-1008].

340. In oral evidence, Professor Hindmarsh was asked to comment on the LibreView charts for the period of 13th to 18th July [J1006-7]. He said: '*what we have are periods of time, usually starting late evening where there is a start of a run of low glucose measurements. Some of them are fairly flattish. From 9 p.m. and early hours of morning there are low readings. At J1007 there are long periods of hypos from 16th to 18th July and 28 hypos are recorded over the course of three days. On 18th July most of the waking day (8 a.m. to 8 p.m.) is spent with AB being hypoglycaemic. The last hypo continued through the night until 4 a.m. the next day [J1006]. There were significantly low figures on 18th July - 2.4 and 2.9. There appears to have been no response to intervention. These readings are really quite concerning from the point of view of AB's health. It looks as though there was intervention at about 10:00 on 18th when his blood glucose level goes up to 6.6. This is the time that the mother is referring to at C189 of para 146 when the mother says that she was giving him foods that were not good for him. ..That increases blood flow which promotes more rapid absorption of insulin from the injection sites. So, you can end up in a situation where you might not have an issue but then you go low because of the easy uptake of insulin in the hot weather. Magnum ice creams, crisp and chocolate bars have a high fat content which will slow down glucose absorption so you would not use them to raise the levels.'*

341. Overall, Professor Hindmarsh said, '*Looking at 16th July – 20th July – his diabetes was not being properly managed.'* I agree.

342. Particular attention was paid to 18th July. To understand this point it is necessary to have the Libreview chart open at DM-J1007. It shows 16 hypos for that day. It also shows that scans were being taken repeatedly throughout the day with the LibreView scanner. There is a lengthy period of hypoglycaemia from about 09:00 hrs right through to 03:00 hrs next day [DM-J1008]. Insofar as there are peaks into the grey zone on 18th July, they are short-lived. The following day (19th) there was another long period of hypos. Again the effect on AB of that pattern of blood glucose levels has to be recollected. The Diasend material (at DM-I32] shows readings that include: 2.7 (9 a.m.), 2.1 and 2.3 (both at 10 p.m.).

343. In cross examination, Professor Hindmarsh said: '*it may be that some advice would be sought from the team. 18th July was a Sunday but I would expect her to ring in by Monday p.m…. Magnum ice cream will smooth out the absorption profile. The fat content would smooth out the glucose absorption. You might see raised glucose but would not see a large peak – it would be spread over 2-3 hours and so might contribute to the smoothed out process of the readings for that day of 18th July. I do not reach adverse conclusions about 18th July. It looked as though it was a very difficult situation that the mother was in. It was obviously quite difficult for the mother, including the weather. I do not suggest that covert administration can be substantiated for that day'.*

344. Counsel for the mother submitted*: 'Professor Hindmarsh analysed the data for 18 July 2021 with particular care. The heatwave might well have "promoted more rapid absorption of insulin from the injection sites". In that situation "you can end up in a situation where you would not normally have any particular issue but on a hot day you might find you go low because of the easy uptake of insulin in hot weather". One cause for the relatively flat line on 18 July 2021 could be "over-estimation of carbs" (XX by M). Magnums, crisps and chocolate bars might also have an effect - the relatively high fat to glucose ratio in ice-cream "smooths the absorption profile" of the glucose per Professor Hindmarsh. He emphasised that he had reached no adverse conclusions about the mother's diabetes management that day and did not criticise the timing of her call to the nurses the following day: indeed he was sympathetic with her efforts – "it looked as if it was a very difficult situation they were in. She tried a number of options, not the best, but what she had available and obviously it was quite difficult to rectify the situation" (XX by M). That response, from the Chair of the Medical Safety Committee at UCH, hardly smacks of mismanagement.'*

345. In my opinion the position for this week is very simple. In the mother's own words she '*gave in and wasn't disciplined with his diet, but it was out of pure desperation.'* Combining that approach to diet, the mother's own 'desperation', the inevitable difficulty that must have been caused to his insulin regime when he was being fed on snacks and the hot weather produced the result that is so clearly visible on the LibreView and Diasend material. For AB this must have been another wretched week. I agree with Professor Hindmarsh's overall opinion that '*his diabetes was not being properly managed'*. Further, on issues of fact, such as this, I think that it is for the judge to reach a conclusion, as I do (I say that lest it be said that I have departed from the view of Professor Hindmarsh expressed to Mr Goodwin but not reflected in his overall opinion). My analysis of fact is as I have stated.

346. As to the fact that this was a heatwave, I accept that heat may increase insulin absorption rates. But hot weather happens, and a reasonable parent of a diabetic child has to be able to cope with it.

347. I was referred to another text message by the Local Authority. On 18th July the mother was in text communication with EG (a friend) [EM-394]. She said: '*ABs sugars have been horrendous only reason we ain't back in hospital is cause I've not told the nurses how bad if really is lmao.'* It is submitted that the mother's text '*is an example of the mother hiding information from the nurses. Why would she not tell the nurses.'* I reject the submission. The LibreView material would all be visible to the nurses. They could access it remotely and, even if that were that not so, they inspected it. Certainly, the next day, Nurse S reviewed the Diasend material and wrote at I4341: '*Diasend*

reviewed, see copy under charts. Time in range 44%, 1% above, 54% below and an average BG level of 4.3mmol. Telephone call made to mum, no answer. Message left to call office back. Data sent to Dr G as Diabetes consultant this week so that he is aware of the current situation.'

348. Further, that day, also, the mother spoke to Nurse S on the telephone. The note at I4340 reads: '*Telephone call received from mum who reports that the recent hot weather has really been affecting AB and he is suffering with continued hypos during the day and night. Mum reports that she has been keeping AB at home, indoors to prevent exposure to heat. Mum reports that last night, AB had a hypo of 2.1mmol and initially described him as difficult to rouse and that mum felt that she may have had to give the Glucogen injection, but then said he was screaming and alert. Mum managed to get AB to have some sweets and hypo was rectified. Mum reports that she spoke with a PDSN on Friday who advised to reduce Insulatard from 2 to 1.5units. I have advised that mum reduces Insulatard again down to 1unit from tonight. I have also asked mum to change the ICR for all time blocks from 1u:25g to 1u:35g. Mum confirms she has done this, and also confirms that she has been giving Humulin S 30 mins before all meals and giving AB snacks between all meals and before bed. Mum reports that she does not want to return to hospital as she feels that the team have not given any answers, nor do anything which she cannot do at home, however, of course would bring him back if necessary. Reassured mum that we will be in contact every few days to monitor how AB is doing and support mum.'*

349. **21st July 2021** – I now need to come on to Wednesday 21st July 2021. That day is still in the heatwave week – see C189, paragraph 145 and, therefore, what I have said about that week applies to it. The Diasend material relating to the period of 19th to 21st July is at DM-I32. The LibreView material is at DM-J1008. The latter shows 11 hypos on 19th July, 8 hypos on 20th July and 6 on 21st July. There are long hypoglycaemic episodes on each day. AB's blood glucose levels were not being managed adequately throughout that period.

350. The 21st July has received particular focus because it is on that night that the mother called an ambulance for AB. The events of that night run into the early hours of the next day, 22nd. It is alleged that the mother delayed, wrongfully, in calling an ambulance, as well as mismanaging AB's diabetic care that day. As I have stated, I accept that his blood glucose levels were not being managed on that day and on the week before. That is the context of the allegation of the delayed 999 call.

351. The case against the mother is put in this passage in the guardian's closing address: '*On the 21st July the M called 999 for an ambulance at 22:21. She reported to the ambulance crew that she had not been able to rouse AB for 1 hour before she decided to call 999 [E35]. A review of the LibreView chart shows that AB's Glucose was 2.2 mmol/L at 22:00, with the red line having been steady prior to 21:00. This therefore appears to support M's account that she had left AB in an unrousable state for at least 1 hour, possibly longer. Given the two reminders she had received from the diabetic team about calling 999, see para 14 (c) above, and her clear evidence to the court that she knew to call 999 if he was unarousable, this on any analysis represents a significant and serious episode of culpable neglect that exposed AB to the significant risk of harm. It is further compounded by M failing to inform the diabetes team when she spoke with Nurse S on the 22nd July 2021 that AB had been unrousable for an hour,*

thus preventing the team from undertaking further investigations or taking further action to prevent this occurring again'.

352. The relevant part of the paramedics' record for these initial purposes at SB-35 reads: '*OA - Met by pt's mum, Pt laying in bedroom on the bed, a(V)pu, slightly pale in colour, normal WOB. HPC - 5/12 ago pt started having frequent hypoglycaemic episodes per day, mother stating approx. 15 hypo's per day and approx 6 hypo's per night. Pt has had 7 hospital admissions in last 5/12, longest admission was 2/12. Normally mother is able to self-manage, however this evening she was unable to wake pt for longer than normal, checked his BM which was 2.7. Mother attempted to put pt's medication in his milk and administer sweets but unable to do either as pt kept refusing. Pt normally comes around after approx 30 minutes, however tonight pt was still unable to be roused after 1 hour so mother called 999. Pt is under investigation for cause of hypo's, and mother talks to consultant on a daily basis.'*

353. The Local Authority submitted in closing: '*On 21 July 2021 the mother delayed calling an ambulance by over an hour. She indicated this to the paramedics on 21 July 2021 [SB E35]. She accepted the time delay in her oral evidence. She could not provide an explanation for the delay. The delay was unreasonable, against medical advice and placed AB at risk of serious harm.'*

354. On behalf of the mother, it was submitted: '*the evidence does not establish mismanagement or insulin interference on 22 July 2021* [counsel mean the night of 21/22] *when an ambulance was called to the family home. Professor Hindmarsh explained that although there were a number of low blood sugar readings, the cumulative hypos may have made AB less symptomatic. Furthermore, this was at night and the distinction between a nocturnal hypo and a sleepy child would have been less clear. The Libre records showed a large number of hypo episodes that day i.e. the mother's account to the paramedics of 15 hypos a day was supported by the data. In her statement the mother describes AB as "hypo and drowsy and not accepting glucose treatment…clammy but breathing normally" [C190]. As described accurately in her oral evidence, she dialled 999 at 21.20, 22.01 and 22.15 [EM E46]. In the 999 call AB is described as 'in hypo and refusing all treatment' [SB E34]. The crew attended at 00.38, thus more than 3 hours after the first call, and left at 01.49. During the long wait for the ambulance the mother exchanged text messages with a friend, sharing her anxiety. The paramedics' initial observations accord with the mother's own description of AB - "pt laying in bedroom on the bed…slightly pale in colour, normal WOB…initially moving very little…initially reduced GCS" [E35]. The mother's oral evidence was that AB "sat up, spoke and took treatment" when the crew arrived. The written record states "when crew attempting to rouse, patient gradually started to become more alert over 2-3 minutes but still not opening eyes. Pt agreed to eat some sweets, becoming fully alert, GCS 15 in approximately 5 minutes". The vital signs table confirms this was between 00.44 and 00.49 [E36]*'.

355. In oral evidence the mother said: '*the night had been difficult because he would not take the treatment. I can't remember what we were doing that day. I remember the night time. I was trying to wake him up*.'

356. The mother was in text communication with her friend, E and told her [EM416]: '*Got ambulance out for AB …He's fucking refusing his hypo treatment ffs 21/07/2021… Ridiculous cause I can't refuse to go to Hospital…Called for an ambulance 15 minutes ago 21/07/2021…Why isn't he priority 21/07/2021…Sorry no 21 minutes ago …I can't give my kid hypo treatment …ABs gonna be not breathing by the time they get here.*

[09:51 next morning]...*Still home they popped a line in and gave him glucose ...He finally come around about half hour later'*.

357. The last hypoglycaemic episode that night began at 20:00 hours and lasted until shortly before 01:00 hrs on 22nd July 2022 (i.e. for nearly five hours). His blood glucose levels were shown there at about 2.2 for most of that time, although I note the Diasend reading of 3.1 at 22:00 hrs [DM-I32]. Professor Hindmarsh said, in relation to J-1008: *'on this page we have quite a number of hypos. Where you have a succession of hypos, you lose some of your ability to register or show symptoms – therefore, the response may become attenuated and less observable…So, as to the level of 2.2 – a one off reading at that level you would see a number of changes such as possible unconsciousness and coma – with a number of episodes you might not have reached the level of unconsciousness. Here, he would have been asleep at 22:00. When the mother spoke to the ambulance crew she said that he had been having 15 hypos a day – you can see from this page that there were a lot of them. That is quite concerning because it does not look as though the interventions did make much difference.'*

358. The report of the paramedics was provided during the course of this hearing [SB-E35]. The first 999 call was at 21:20 hrs, then 22.01 and then 23.15 hrs [EM-46]. The last 999 call was made at 22:21 hrs. The paramedics arrived at the home at 00:38 (over two hours later). The paramedics record, beyond the passage that I have set out above: '*… patient laying in bedroom on the bed...HPC (history of presenting complaint) – 5/12 ago patient started having frequent hypoglycaemic episodes per day, mother stating approx. 15 hypo's per day and approx. 6 hypo's per night….normally mother is able to manage, however, this evening she was unable to wake patient for longer than normal, checked is BM which was 2.7…after 1 hour mother called 999…On examination… initially no interaction……patient reduced Glasgow Coma Score (GCS) on arrival… when crew attempting to rouse patient, patient gradually started to become more alert over 2-3 minutes… but still not opening eyes…Patient agreed to eat some sweets, becoming fully alert, GCS (15 in approx. 5 minutes…not cannulated…rang CH (The Children's Hospital) advice line, spoke with SpR D who agreed patient could remain at home and advice for patient's mother to speak to diabetic team mane.'*

359. The mother's different account of what happened when the paramedics arrived is at C191 para 152: '*The paramedics took quite a while to arrive and when they walked into the bedroom, AB awoke fully at their presence, and was talking and laughing with them. It was relieving to see him well again but also frustrating, as it made me look like I had called an ambulance needlessly and wasted their time. They called the on-call team at the hospital to see if they wanted him to come in. Thankfully the team were happy for us to stay home'*.

360. The mother was asked why she did not call 999 for over an hour and she said that she could not explain that. She also said: '*I did tell the paramedics that he was having frequent hypos every day and having 15 hypos per day and approximately 6 hypos at night.*'

361. That being the evidence and argument, I think that the position is very clear:

    i) This day came at the end of the heatwave week that I have considered. It has to be seen in that context.

ii) AB was hypoglycaemic at repeated times throughout the day.

iii) His last period of hypoglycaemia began at about 20:00 hrs. From that time it dropped gradually to 2.2.

iv) The first ambulance call was at 21:20.

v) Although the mother has a tendency to exaggerate, the reason she called the ambulance was because she could not rouse AB and had not been able to rouse him for a long time before she called for an ambulance. Not only is that what she said but it was the reason for the call being made.

vi) Although I accept that, at night time, it might be less clear that a child was being affected by a hypo, that is not the position here. The mother did know of AB's condition which is why she later called the ambulance. She had not been able to rouse him then for about an hour, as she said. This also applies to the point that a succession of hypos can mask the effect of a later event – that is not what the mother is saying. She did know that AB could not be roused.

362. Therefore I accept the points made by the guardian in relation to this event. Quite simply, knowing that she could not rouse AB, she should have called an ambulance immediately. I recognise that it took the ambulance two hours to arrive. It is pure chance that the delay by the mother and by the ambulance service did not end differently. The fact that there are two wrongs does not make either of them right.

363. On 22nd July 2021, AB was re-admitted to hospital. He remained there until the 24th August 2021.

364. Allegations 7 and 8 in the Local Authority schedule are:

7) Following admission to hospital on 23rd July 2021 overnight to 24th July and on 28th July 2021, AB experienced hypoglycaemic episodes. These were caused by exogenous insulin. The Local Authority schedule cites the report of Professor Hindmarsh at E56, E60-61 and E23. It also cites I3318-I3414.

8) The exogenous insulin referred to at 7 above was administered by AB's mother, who was present at all relevant times and who was aware that she was administering unnecessary and excessive insulin that would result in hypoglycaemic episodes.

365. Dr G says at SB-C52: '*AB was again admitted to the children's Hospital on 22nd July 2021 with recurrent episodes of severe hypoglycaemia (blood glucose <3 mmol/L) despite reportedly being given a very small dose of Insulin. His blood glucose were as low as 1.9 mmol/L which required 3 boluses of 10% dextrose, continuous intravenous glucose infusion (10%), intramuscular glucagon (glucagon is a hormone that counter-regulates the effect of Insulin by increasing the blood glucose levels). AB required a concentrated form of glucose solutions (12.5%) to maintain his blood sugars at a safe level. Prior to the admission to the emergency department, AB was reported to have received only 0.5 units of his insulin in the evening. Due to the significant nature of*

hypoglycaemia AB's injections were once again stopped and it was replaced by sliding scale (continuous intravenous infusion of insulin which is adjusted depending on his blood glucose levels).' The sliding scale insulin was Actrapid (see the glossary).

366. **24th July 2021 –** I now need to move on to this date on which the Local Authority says a finding should be made that the mother administered insulin to AB covertly and wrongfully. The mother denies the allegation. The guardian does not support the Local Authority in seeking the finding and leaves it to me to decide. I do not intend to make the finding sought.

367. The LibreView chart for the night of 23rd July going into 24th July is at DM-J1009. The nurse on duty was Nurse CD. In the light of what I say about this evening I would like to emphasise that I am not criticising her. She works in a very busy ward and does a very important job for which she deserves every recognition.

368. As to the layout of the cubicle which AB and the mother occupied I had this evidence:

    i) The mother says that, '*on that day, AB was in a cubicle. It did not have a bathroom. There was a pull down bed on the other side of AB's bed from the door. My Mum came in every Sunday when I would go home and try to catch up on sleep. It was hard to sleep anyway since there are machines that are beeping and there were lights on in the corridor outside. At one point he had bis bloods checked every hour, otherwise he would not have his bloods checked regularly. I would have been with AB that day and there would have been long periods when I would be alone. When AB was asleep the light in the room would be off. Before the supervision started I don't remember pulling the curtain at night – the light in the corridor was not that bright and you got used to it.'*

    ii) Nurse CD said: '*On 23rd July AB was sleeping in his own cubicle. There would normally be the mother with him. There was bedding for the mother in that cubicle. The mother was present: 'mum resident and updated with plan'. I would have gone in every hour. The mother would have been in the room with AB. I can't remember whether other nurses would have been going in…I can't remember how often I came in to see AB, normally would be once every hour.'*

369. As to the mother's behaviour that night Nurse CD said in evidence: '*If the mother had behaved inappropriately that evening, I would have noted it in several documents. I would have documented it if I thought that she was trying to hide something from me. I would have noted if I thought that she was being evasive. I did not think that there was anything dodgy going on – if I had, I would have noted it.'*

370. There are five key factors relating to the allegation:

    i) It is necessary to find the time when the pump was turned off by Nurse CD. The Local Authority contends that I should find that the pump was turned off at about 01:00 or, at least by 01:15. The guardian and mother say that the evidence about when the pump was turned off is not reliable. That timing is the first main variable.

ii) Was the line flushed with insulin and, if so when? That is the second variable. The guardian and mother say that the evidence in relation to that is not reliable. The Local Authority contends that '*the cannula to which the insulin sliding scale was connected was flushed and then taken down'*. The hospital was asked about the flushing of lines with insulin, which is not good practice, as Professor Hindmarsh said. At E48A, the hospital replied to questions from Professor Hindmarsh in relation to whether there was an insulin flush and included: '*It is the expectation that once an infusion stops, it is disconnected and the cannula is flushed';* so, on that basis, the flushing would come after the insulin is stopped. Nurse CD said in evidence: '*In practice you would flush it and take it down.'* On that evidence it cannot be said for certain whether the line was flushed but it would appear probable that it was in accordance with the usual practice. It could not be said whether any such flush came before or after the stopping of the pump. Logic, to me, would suggest that it would be flushed after it had been stopped to avoid flushing insulin into the child.

iii) When was the blood screen taken? There is no controversy about that. It was taken at 01:39 hrs on 24th July.

iv) What level of insulin was found in blood screen that was taken at 01:39? There is no dispute about that – 9.7 mU/l. I mention now that the residual insulin found in the blood screen on 28th July was over 16 times that amount (160 mU/l).

v) What is the half-life of this type of insulin (how quickly does it reduce once it is in the blood stream)? The answer to that is not controversial. It has a half-life of four minutes.

371. The logic and mathematical basis for the case put by the Local Authority can be seen in its barest form at E71 where Professor Hindmarsh said: '*If we assume that at switch off no further insulin enters the circulation and the half-life (time for 50% of the insulin to be removed from the circulation) of insulin is 4 minutes, then after 20 minutes with either infusion rate there would be undetectable insulin present in the circulation whereas the value 39 minutes after cessation of the insulin infusion was 9.7 mU/l. The assumptions that I have made is that there are no insulin antibodies present that would alter the removal of insulin or prolong its presence in the circulation. This would appear reasonable as there were no insulin antibodies present when measured. The degree of renal impairment is insufficient to alter insulin dynamics and there is no evidence of liver failure which would also prolong insulin metabolism.'* The argument goes, therefore, that, since there was 9.7 mU/l of detectable insulin when there should have been none, there must have been insulin administered to AB.

372. Based on the above, the guardian asked [E234] whether it is possible to specify the amount of non-prescribed insulin that would have been administered to result in the hypoglycaemic episodes on 24th July 2021. Professor Hindmarsh replied: '*On page 11 of my report I have attempted using Figure 1 in my report to estimate a likely insulin dose that would have resulted in the plasma insulin concentration measured at 01.39. This I have suggested could have been 5 Units of short/ultra-short acting insulin'*.

373. However, if the pump switch off was later, the figures alter. If there was a flush of the cannula and the cannula was used for the blood screen, the figures alter further. If the

flush was performed after the pump was turned off and not contemporaneously with it (or before) then the figures alter further. There is no clear evidence of how the screen was taken. Nurse CD said: '*I don't remember if the blood was taken through the cannula or separately. Good practice means that a sample should not be taken from the cannula but I do not have any evidence of how it was taken that night'*. Therefore, if it was taken from the cannula it could have been contaminated by an insulin flush; since the insulin identified in the blood screen is so small, that could obviously make a difference.

374. Professor Hindmarsh provided this table after a period of adjournment (the column headed 'judge's comments' has been added by me as part of this judgment as have the zero figures):

Time	**Insulin no flush**	**Insulin + flush**	**Judge's comments**
01.00 **01.04** **01.08** **01.12** **01.16** **01.20**	**16** **8** **4** **2** **1** **0**	**242** **121** **60.5** **30.3** **15.1** **7.6**	**Therefore the insulin of 9.7 could not be explained without fresh administration (whether there was a flush or not).**
Time	**Insulin no flush**	**Insulin + flush**	
01.15 **01.19** **01.23** **01.27** **01.31** **01.35** **01.39**	**16** **8** **4** **2** **1** **0** **0**	**242** **121** **60.5** **30.3** **15.1** **7.6** **3.8**	**Therefore, if there was no flush, the insulin of 9.7 could not be explained without fresh administration, whether there was a flush or not. If there was a flush the figure of 9.7 remains unexplained unless the flush took place separately after the pump was turned off.**
Time	**Insulin no flush**	**Insulin + flush**	
01.20 **01.24** **01.28** **01.32** **01.36** **01.40**	**16** **8** **4** **2** **1** **0**	**242** **121** **60.5** **30.3** **15.1** **7.6**	**Therefore, if there was no flush, the insulin of 9.7 could not be explained without fresh administration. Whether there was a flush or not. If there was a flush, the figures would be too close to call. If there was a flush after the pump was turned off, then 9.7 mU/l of insulin could be explained.**
Time	**Insulin no flush**	**Insulin + flush**	
01.25 **01.29** **01.32** **01.36** **01.40** **01.44**	**16** **8** **4** **2** **1** **0**	**242** **121** **60.5** **30.3** **15.1** **7.6**	**As above.**

375. Professor Hindmarsh said in evidence: '*I said that 'it was a very close thing' - I was making a remark about the paucity of the information upon which to base a finding. I*

was also saying about the timing – we only have 39 minutes (1 – 1.39 a.m.) we are talking about a few minutes and the conclusions could alter. We don't have the time when the pump was turned off from a pump print off. The time comes from the nursing log…The figures could have an error of 10%. The 01:15 hrs figure with a flush reduces down to 3.8. So, the stopping of the pump at 1.20 leading to a reading of about 7.6 would be sufficient to explain the reading of 9.7 on the sample. 7.6 is close enough to 9.7 to mean that it is not possible to exclude the pump stopping at 1.20 with a flush as the reason for the sample reading of 9.7 given the proximity of 9.7 to 7.6. This analysis does not absolutely exclude the possibility of the pump being turned off between 1.15 and 1.20. If the flush was later than this, it could further distort the figures and mean that the figure of 9.7 would be further explicable. The right hand column on the above table assumes that the switch off and the flush occurred at the same time. If you take the pump switch off at 1.15 and then say the flush was at 1.20 this would mean that at 1.39 you would be much closer to the 9.7 reading'.

376. As to when the pump was turned off there are these key documents:

i) The document at I3938 which is a fluid management chart. It marks the pump as having been stopped within the hour space that lies between 01:00 and 02:00 hrs. Thus it does not help as to when it was stopped. As Nurse CD said in cross examination: '*the document just gives you whole hours, it is not broken down into minutes'.*

ii) The nursing note of Nurse CD at I3384. The key part reads: '*24.07.2021 0115* [there is a blot on the second 1 but Nurse CD said that it is 'most likely' 1:15] – *sliding scale insulin currently stopped, BSL at 01:00 – 1.8. Doctors aware and will perform hypo screen*'. The Local Authority argues that the record at I3384 is contemporaneous and should be relied upon.

iii) The statement of Nurse CD. It is not in the bundle. The important part reads: '*I have reviewed the medical records from the evening of 23rd July 2021…From my review of AB's drug chart I note that the sliding scale insulin was stopped at approximately 01:00 – 01:45 following AB's low blood sugar of 1.8. It would have been myself who stopped the insulin.'*

377. Nurse CD gave this evidence about the time when the pump was stopped:

i) She was asked by reference to this document where the time of 1.45 comes from and said that she could not remember.

ii) *I have to record this very carefully. We checked his blood glucose levels on the hour and that would have been on the hour. The blood glucose levels reading came before the stopping of the insulin. I would have contacted the medical staff immediately. I switched the insulin off when I realised it was low. I did so pretty immediately. I would have then contacted the doctors after turning off the insulin. I would have switched off the insulin immediately after the reading of 1.8, which was dangerously low.*

iii) *I was asked to prepare a statement for the court and knew that it was an important statement for the court. I set out the information as accurately as I*

could. I relied in part on my notes and in part on my memory. I don't seek to amend the statement'.

378. On the issue of timing of the pump switch off it was submitted as follows:

i) On behalf of the mother: '*The critical evidence here comes from Nurse CD. On one hand we have her nursing note. On the other we have the diet and fluid management chart at [I3938] which, as confirmed in her evidence, showed that the infusion stopped at some point after 1am (XX by M). Her sworn statement and oral evidence describe a wider time bracket – 01.00-01.45am. Critically, she had written her statement with her primary notes in front of her and using her memory. We say 'critically' because this is not an instance in which a witness has made a broad assertion about a time bracket based on memory alone, subsequent perusal of the notes permitting a much more defined figure. In giving sworn evidence that the period was 01.00-01.45am the nurse was, in effect, providing additional commentary to the primary note. Her oral evidence and written statement therefore supersede that note*'.

ii) On behalf of the guardian: '*Following his qualification of the impact of potential contamination and more crucially the precise timing of the pump shut off for the 24th July 2021 the Children's Guardian does not feel able to advance a positive submission on unauthorised exogenous insulin administration on that date. It will obviously be a matter for the court to consider the totality of the evidence relating to the 24th and in particular the weight that can be given to Nurse CD's oral evidence which confirmed that she switched the pump off "immediately" and then "pretty immediately" after the BSL level was measured at 1.8 and insulin was recorded as stopped at 01:00'*.

iii) On behalf of the Local Authority: '*The court is invited to find in relation to 24 July 2021: i) The insulin sliding scale was switched off immediately after 01.00 and certainly before 01.15; ii) That the cannula to which the insulin sliding scale was connected was flushed and then taken down; iii) That the plasma insulin present in the 01.39 hyposcreen cannot be explained other than by earlier, unauthorised administration of insulin; iv) That this insulin was administered by the mother, who had the opportunity to do so throughout the evening of 23/24 July 2021*'.

379. As all counsel agreed, the evidence upon which I am asked to rely is circumstantial. I have given a specific direction of law in relation to that as set out in the directions that are appended to this judgment (paragraphs 4 and 5).

380. My conclusion is that I do not think that the evidence of the time at which the pump was switched off is reliable. I do not consider that, on the evidence that I have heard, the Local Authority has shown to the civil standard of proof that the pump was switched off when it alleges. Further, I consider that it would only take a small amount of contamination at the time that the sample was taken to achieve a reading of 9.7 mU/l (e.g. drawing the sample from a site where there was a reserve of insulin through cannula defect). The passage of time between when the pump was switched off (whenever that might have been within the parameters that are suggested) and the taking of the blood screen is short (at most 39 minutes).

381. Overall, I do not regard the case advanced by the Local Authority to be based on reliable evidence or sufficient to satisfy its burden of proof to the civil standard.

382. I therefore reject the seventh and eighth allegations insofar as they relate to the 24th July 2021. Given the binary approach of the court, that means that, for the purposes of these proceedings, the mother did not behave in the way alleged on 24th July.

383. **25th July 2021** AB is recorded as being stable at 09:00 [I3402] and the plan was made that he should continue on the 'current sliding scale'.

384. In cross examination by Mr Goodwin, Professor Hindmarsh said: '*As to 25th, 26th and 27th July, the same applies to those dates as applies to other dates in July, save for 24th and 28th July. The hypos could be associated with flushing the line on those dates. I am concerned that you should not flush lines with insulin. I think that, in the absence of any biochemical support, I would be happy to ascribe the hypos on those days (25th to 27th July) to flushed insulin action. I don't know if we confirmed that we substantiated that flushing was a regular event. It does sound as though it was standard procedure to do that but the evidence that it did happen was not as robust as we might have liked.*' The reply at E48A would appear to show that flushing was practised.

385. In his report, Professor Hindmarsh says:

i) At E60: '*Further hypoglycaemic episodes took place on the evenings of 25th, 26th and 27th July 2021 and occurred between 21.00 to 23.40 and appeared in time to be related to the switch off of at 20.00 of the intravenous insulin infusion which was done to prevent nocturnal hypoglycaemia. This may relate to the practice of flushing the infusion line after discontinuation of the sliding scale insulin infusion. The deadspace that would be flushed was 0.45 ml made up of a 22G cannula deadspace of 0.16 ml and the nonreturn extension set of 0.29 ml (information from the Hospital). This would represent an intravenous bolus of 0.45 Units of insulin. The correct way to clear the line would be to infuse 0.9% sodium chloride at the same rate as the insulin infusion was at the time of discontinuation to clear the line. If the deadspace is 0.45 ml that would mean running the pump for an additional hour which was not the case. An intravenous bolus of insulin produces hypoglycaemia (blood glucose 2.6 mmol/l) 20 minutes after administration (assuming a normal blood glucose at commencement of the test) which usually normalises 60-90 minutes after insulin administration. In this case the flush would have delivered a bolus of 0.45 Units of insulin which would be a fifth of the dose that would have been administered if AB was having the IIHT test of 2.*'

ii) At E67: '*Further hypoglycaemic episodes took place on the evenings of 25th, 26th and 27th July 2021 and occurred between 21.00 to 23.40 and appeared in time to be related to the switch off of at 20.00 of the intravenous insulin infusion which was done to prevent nocturnal hypoglycaemia. No detailed evaluation of these episodes with a hypoglycaemia screen was undertaken.*'

386. I now have to deal with another point relating to text messages that has been raised by the Local Authority in relation to 26th July 2021.

387. At 09:23 she sent a message to 'El' (a friend of the mother) saying: '*there talking about transferring him to another hospital*'. At 09:30 hrs she sent a text to 'K' (another

friend) in the same terms. At 16:43 she sent a text to 'E' saying: '*AB might be being transferred to gosh…Great Orman Street'*. When asked about this in written questions the mother replied that she did remember this 'slightly' and that '*the whole conversation came from getting the expert advice from somewhere…I don't know if it was a doctor from Great Ormond Street…I can't remember the specifics.'* The mother was asked further questions about this on paper but her answers do not add anything of forensic value.

388. At I3409 there is a medical record by Dr B. It includes that a referral to a Dr W of Cardiff was being considered for a second opinion; no such second opinion was obtained, Dr G said in evidence. Dr G said that he could not remember any discussion about the transfer of AB to Great Ormond Street. Dr G was not saying that Great Ormond Street was not discussed. Nor would it be possible to say that there was no such discussion at some point between a medic or nurse and the mother. The text has no relevance in my opinion.

389. There was discussion among the treating team that day leading to the plan that is referred to at I3409. As part of the plan, it was agreed that there needed to be clear documentation. Dr B said that this was '*a call to keep scrupulous notes. We did not know what was going on with AB. We needed full and accurate information before reaching any adverse conclusions. We all decided that we needed clear documentation, including about timings. The plan on that page reflects the absence of that level of information in previous records*'. Dr B said in evidence that the plan was intended to state the documentation and detail that were needed before conclusions were reached. That led to Mr Goodwin QC putting to him: '*prior to this date, the necessary forensic approach was not taken on the ward?.'* He replied: '*that is almost inevitable when you think about a busy ward'*.

390. Also on this day there was a reference of AB to the plastic surgery department. At I3970 there is a reference to the fact that he had been '*reviewed by plastics for an extravasation injury but they felt the skin was not threatened and had minimal erythema so did not require a washout'.* That relates to a failure of the cannula system which I carry forward to my analysis of 28th July.

391. That evening the mother went home at about 20:40 hrs after AB had gone to sleep and AB's care was taken over by the father [C195]. When the mother was informed that AB was 'low' again, she returned to hospital at 22:40 hrs. The mother refers to a medical note at I3557 and says at C195: [the note reads:] '*At 2345 AB complaining that mum 'had knocked' cannula, checked myself and the clamp from the cannula /with insulin attached to was unclamped, the insulin was stopped at 2200 and the clamp was definitely clamped. Insulin remained off and line clamped again. Mum had come back at 22.45" [I3557]. I have no memory of this at all and don't know exactly what a cannula clamp is or how it is used. If AB said I knocked it, then I imagine I did, but it would have been accidental. Either way it had no bearing on his treatment that night because the insulin had been stopped before I arrived back on the ward.'*

392. On 27th July 2021 AB was started again on the 'sliding scale' at 07:00 hrs. His cannula had to be replaced [I3565] because it was leaking. That is one of the references to faults with cannulas that Mr Goodwin QC rightly referred me to. I note it.

393. **28th July 2021 -** I now turn to the important date of 28th July 2021. It is on this date that, I find, the mother did administer insulin to AB covertly and wrongfully as alleged in paragraphs 7 and 8 of the Local Authority schedule. The infusion pump was stopped that night at 20:38 hrs. A blood screen was taken at 22:20. The insulin measurement in the blood screen was 160 mU/l. The screen was analysed by a Professor T from Cologne in his report dated 30 September 2021 [E23]. The LibreView chart for the day is at DM-J1010 and it shows that AB was hyperglycaemic for most of the day and that, shortly before the pump was switched off his blood glucose levels began to reduce. They continued to fall until they reached about 4.6 at 21:00 hrs. By 22:00 hrs they had reduced to 1.4 mmol/l [I3864]; that is a very low and dangerous level that appears to have been measured by a finger-prick test. AB would obviously have been affected by having blood glucose levels such as that; he would be at significant risk of unconsciousness (see the glossary).

394. The issues relating to this day are complex and involve a large amount of evidence and contention which includes: a) how the blood screen was taken (was it by venepuncture (needle) or through the cannula?) b) if by the cannula, might the cannula have been contaminated with insulin? c) might the sample have been otherwise contaminated with insulin? d) might this be a case of 'unidentified or unknown medical cause'? Of course, it is for the Local Authority to prove its case to the civil standard; as I have said in the annexed directions of law, at no point does the burden shift onto the mother.

395. The mother said that AB was in the same cubicle as on 24th July. In oral evidence she said: '*I remember bits of that day. Bits and bobs. That night I was tired. I was tired every night. I was tired and exhausted. I wished I had more help…someone to take over. I don't think anyone knew how tired I was. I was exhausted. I remember Dr J coming in that night. He was like any other doctor. I think that this was the first time we met him. He was nice to me and AB. AB was upset when his cannula was leaking and he had to have a new line. It was really hard to see him crying. He had problems on 26th and 27th with leaking cannula. I remember the day it leaked under the skin – 26th when we had to have a plastic surgeon. I remember thinking 'that is my child'. I was cross for him. I was just angry as it was another thing that I did not want him to go through.*'

396. The position of the parties is that the Local Authority pursues its allegation and seeks the findings set out in paragraphs 7 and 8 of the schedule. The mother denies the allegation and has done so from the start. In her police interview at SB-H60 the mother said on 4th September 2021: '*And obviously, you know, I cannot -- I'm not going to sit here and say there wasn't insulin in his blood because obviously there was, there was a blood test…I can't sit here and say there wasn't, but how that got into his bloodstream, I can't give you an answer because it wasn't from me.*'

397. The guardian's position is put in this way in counsel's closing submission*: 'The position in respect of the 28th July 2021 is, however, different because: a) Despite lengthy and skilful x-examination from NGQC Professor Hindmarsh was unshaken from his view that the most likely explanation for the findings was unauthorised additional exogenous [corrected by me from endogenous] insulin administration by persons unknown; b) There remains "solid information to implicate unauthorised additional. exogenous insulin administration" on 28th July 2021 [E73]; c) The accuracy of the pump stop time is not seriously in question, given the date and time*

stamp action; d) Professor Hindmarsh rejected the suggestion that a combination of exercise and the Actrapid rate being changed multiple times could explain the hypoglycaemic screen results [NGQC-XM]; e) Professor Hindmarsh confirmed to the court that there were only two possibilities to explain the findings on the 28th July, either a faulty cannula delivery system or insulin was given by persons unknown. He went on to tell the court that it "would be fairly safe in absence of any information to contrary to say could safely dismiss it [faulty cannula delivery system] as an alternative" and that he considered this to be "unlikely" as an explanation; f) The LibreView chart for the 28th July 2021 [J1010] shows that AB was hyperglycaemic prior to the window when he probably received unauthorised exogenous insulin. g) We know that M had previously sent a text saying "So fuxk fhat im giving him a small correction dose" [E678-9] rather than follow the guidance to call the diabetes team back if his levels went higher and that she told Nurse S on the 19th July that "she feels that the team have not given any answers, nor do anything which she cannot do at home". This shows that the wider canvass establishes that M did think that she knew best at times and was prepared to give AB insulin if she considered it is what he needed on occasion, even if this was against professional advice. Whether this is sufficient evidence to conclude that M therefore administered the insulin is of course a matter for the court. However, there is a complete paucity of evidence to support the contention that M would have done this to deliberately harm AB; h) The M was present with AB at the relevant time, was not searched on entry and had both a supply of insulin and the opportunity to administer the dose, possibly believing that she was doing the right thing'.

398. **Nurse H and Dr J** – Staff Nurse Hl was on duty that evening as was Dr J who was a first year 'GP specialty trainee' and was serving as a Senior House Officer at the hospital at the time. Dr J took the blood screen that was sent for analysis. They both gave evidence at this hearing.

399. Nurse H says in her statement at SB-C58 that she remembers that the mother was on her own in the cubicle with AB. She described in her evidence how she would have come into the room on a number of occasions and checked on AB regularly. He was her only patient that night (or possibly one of two), she said. She said that when AB 'hit' 3.1 she would have called Dr J. She said that she did not remember the method that was used to take the blood screen.

400. She was referred to the document at I3696 which is headed 'insulin sliding scale syringe reading'. The document at I3696 shows her entry at 20.30 that the '*Actrapid taken down*.' She said that that timing was correct '*give or take a few minutes'*. Of course it is now known that the pump was stopped at 20:38. Nurse H had said that if it had been stopped at 20:40 she would have said so. The document at I3980 shows very precise times being recorded. Mr Goodwin QC asked why the infusion rate had been changed at 20:22 when the pump was then stopped so shortly afterwards. Nurse H said that, in fact, the pump should have been stopped at 19:00 that evening; she did not know about that until she spoke to Dr B and, after Dr B had told her, she then stopped the pump. Fortunately, in my opinion, that confusion did not impact upon the issues that I have to decide about this day. As Professor Hindmarsh said: '*the fact that the pump was turned off one hour and 38 minutes late would also not affect the insulin readings at the time of the blood screen given the half- life of insulin.'*

401. Nurse H was asked whether AB hinted at any time that night that he had been injected with insulin by his mother. She said that he had not. Given the state that he was in, the fact that it was night-time and the fact that he was used to receiving insulin from his mother, I do not think that anything turns on this point either.

402. In relation to the cannulas, I was taken to a document at I3750 which records that on 28th July 2021 '*cannula tissued'* – it is a difficult document to interpret because the time of the tissuing is not given and it appears to suggest that the cannula was inserted on 26th July and was in place for three days. I do not know whether this is the same cannula that failed at 04:20 on 29th July – I3415. In relation to that cannula failure, Dr J wrote: '*cannula failed whilst giving last dose of dex so not given*'. Neither Dr J nor Nurse H could say why the cannula failed. There had been cannula failures on each of the two preceding days, as I have set out already.

403. As to Dr J, he made a statement [SB-C62] in which he said:

'*at around 22:00 hrs on 28th July, AB experienced an episode of hypoglycaemia (1.4 mmol/l – in oral evidence he said that he was informed by nurses that this was so). There was a plan in place from the ward round conducted by Dr B…stating that in this case a hypoglycaemia screen should be sent. After the sample was taken, the hypoglycaemia was treated in line with the standard trust protocol. The blood sample by independent venepuncture or using an indwelling catheter. I have reviewed my entry in the clinical records and I did not document how the sample was taken as it is not our usual practice to do so.*

I reviewed the patient again at 00:30 hrs on 29th July 2021 due to ongoing hypoglycaemia. His blood sugars had initially responded to the oral agents but quickly dropped to below 3.00 mmol/l again. At this point, I prescribed a bolus of 10% Dextrose to be given intravenously. 30 minutes later, his blood sugar was 1.8 mmol/l. I discussed the case with the on-call registrar at this point (Dr W). Following this discussion, a further Dextrose bolus was prescribed.

My next entry in the notes was written at 04:20 hours on 29th July 2021. The entry was written in retrospect and details the events since the second dextrose bolus was prescribed . The patients peripheral cannula failed before it was given and so IM glucagon was given instead. At this point I re inserted a peripheral cannula. His blood sugar rose to 11.00 mmol/l at 03:00 on 29th July 2021 Before falling again to 2.8 mmol/l at 04:20 hrs. at this point I prescribed a further bolus of 10% dextrose and advised using further oral agents if his BM was to fall again'.

404. Dr J said that taking a screen should have been done by using a normal needle and it is not standard practice to record where that is done around the body. He said that the blood screen would '*probably would not have been done by a cannula – it would have been either an injection or a more permanent type of catheter'*. When referred to I3750 ('cannula 'tissued'') he said that, almost certainly, this cannula was clogged up. Of course, if the blood screen was done by venepuncture, contamination or other failure of the cannula would not affect it. His evidence on this point however was not certain. He said: '*generally if a cannula is in place then it is not used to take blood. A needle would be used. Generally speaking blood does not come back out of a cannula if you try to draw it out with a syringe'.*

405. **Key passages of Professor Hindmarsh's reports and documentation relating to the 28th July 2021 -** Professor Hindmarsh says at E60:

'*On the evening of the 28th July 2021 the intravenous insulin infusion was stopped at 20.38. Prior to switch off at 20.10 the blood glucose was 15.6 mU/l. At 21.00 the blood glucose was 4.6 mmol/l suggesting insulin action. By 22.00 the blood glucose had fallen to 1.4 mmol/l. Subsequent checks of the pump infusion system revealed no problems with the device. A further hypoglycaemia screen was undertaken at 22.20 and is shown in Table 1 [at E60]. The hypoglycaemia screen shows a normal plasma acyl carnitine with low plasma growth hormone and cortisol. It should be noted that the glycaemic threshold for counter-regulatory hormone release is lower in patients with Type 1 diabetes mellitus particularly in the face of recurrent hypoglycaemic episodes (Table 3) (8).*

The lower values for growth hormone and cortisol probably reflect this alteration in threshold along with some evidence of blunted responses in the face of recurrent hypoglycaemia. The low growth hormone and cortisol are not the cause for the hypoglycaemic episodes as deficiencies of them are associated with the presence of raised ketones and fatty acids during hypoglycaemia whereas in this and the other hypoglycaemia screens the fatty acids and ketones were low/suppressed indicative of insulin action.

The striking feature on this occasion was the high plasma insulin concentration of 160 mU/l. This was confirmed in the Royal Surrey County Hospital, Guilford result of 850 pmol/l (141 mU/l) and 624 pmol/l (104 mU/l) in the PEG treated sample. PEG precipitation removes any effect of insulin antibodies (which were negative) on the assay. These insulin measurements are also like those obtained by Professor T in Cologne where human insulin (no synthetic insulins of the Novorapid, Glargine or Levemir types were detected) was measured at 7.1 ng/ml (174 mU/l). The C-peptide was low at 92 pmol/l (132 pmol/l in Professor Ts laboratory) confirming that there was little in the way of residual beta cell function in the pancreas. This implies that the insulin measured is exogenous which, of course, it would be in anyone with Type 1 diabetes where endogenous insulin production from the beta cells of the pancreas is destroyed by the underlying disease process. Exogenous administration of an oral hypoglycaemic agent was excluded by a negative screen for sulphonylureas, a class of oral hypoglycaemic drugs used to treat Type 2 diabetes mellitus.

We know that the plasma insulin concentration was 160 mU/l at 22.20. The infusion rate of the pump system was 0.53 Units/hour before switching off at 20.38. Using the same pharmacology approach outlined above the steady state plasma insulin concentration would be 17 mU/l. There are three points to this. First this value is lower than that measured at 22.20. Second, we would expect the insulin from the steady state infusion to be close to zero 20-25 minutes after the insulin infusion was switched off. Third, if we factor in the effect of a bolus flush of insulin then this would have delivered in addition to the switch off noted above additional insulin.

With a deadspace of 0.45 ml then the bolus would have been 0.45 Units or 450 mU. Applying the half-life calculations this would mean that the circulating insulin immediately following the bolus would be 225 mU/l (450 mU dissolved in a blood

volume of 2 litres) at time zero or 20.38. With a half-life of 4 minutes then 28 minutes later (21.04) the plasma insulin remaining would be 1.76 mU/l which is below the detection limit of the assay. Even if we combine the bolus flush and the insulin from the steady state infusion (225 mU/l + 17 mU/l) we would start with a plasma insulin concentration of 242 mU/l which after 4 minutes would be 121 mU/l (already below the value detected at 22.20 and would be below the assay level of detection of 2 mU/l by 21.04.

These three observations imply that there must have been additional exogenous insulin present throughout this period. The blood glucose did improve to 6.3 mmol/l at 01.45 but the subsequent entries suggest ongoing insulin action through to 06.15.m. This time duration would be consistent with either short- or long-acting insulin administration'.

406. At E67, Professor Hindmarsh says:

'On the evening of the 28th July 2021 the intravenous insulin infusion was stopped at 20.38. Prior to switch off at 20.10 the blood glucose was 15.6 mU/l. At 21.00 the blood glucose was 4.6 mmol/l consistent with ongoing insulin action from the infusion. By 22.00 the blood glucose had fallen to 1.4 mmol/l. Subsequent checks of the pump infusion system revealed no problems with the function of the device. A further hypoglycaemia screen was undertaken at 22.20 which revealed a high plasma insulin concentration of 160 mU/l. This was confirmed in the Royal Surrey County Hospital, Guilford result and the report by Professor T in Cologne where human insulin (no synthetic insulins of the Novorapid, Glargine or Levemir types were detected) was measured at 7.1 ng/ml (174 mU/l). The C-peptide was low at 92 pmol/l (132 pmol/l in Professor T laboratory) confirming that there was little in the way of residual beta cell function in the pancreas. This implies that the insulin measured is exogenous which, of course, it would be in anyone with Type 1 diabetes where insulin production is destroyed by the underlying disease process.'

We know that the plasma insulin concentration was 160 mU/l at 22.20. The infusion rate of the pump system was 0.53 Units/hour before switch off at 20.38 implying the steady state plasma insulin concentration would be 17 mU/l. There are two points to this. First this value is lower than that measured at 22.20. Second, we would expect the insulin to be close to zero 25-30 minutes after the insulin infusion was switched off. Both these observations imply that additional exogenous insulin was present throughout this period. The blood glucose did improve to 6.3 mmol/l at 01.45 but the subsequent entries suggest ongoing insulin action through to 06.15. This ongoing insulin action would not be explained by the switch off issues that have been considered'.

407. At E228, Professor Hindmarsh was asked: Please consider paragraph 188-190 of the mother's statement dated 9 December 2021 and comment on the two hypotheses presented, as regards the impact of the broken cannula on the level of insulin identified in the hypo screening test result of 28 July 2021. He replied:

'*Leakage from a cannula into the vein is unlikely and if anything if the dressing was wet would suggest that less insulin was being delivered into the blood stream than might be thought. This is due to the cannula patency being reduced such that backpressure has caused fluid leakage further back. This is similar situation if the*

cannula becomes "tissued" in the surrounding subcutaneous tissue where the back pressure leads to flow of fluid and insulin outwards through the cannula insertion point. In my report I have considered insulin leaching from the plastic of the cannula contributing an additional 10-15% to the insulin delivered and this amount would not materially affect the calculations made. Once the syringe pump is switched off insulin is unlikely to move from the cannula space into the circulation as the pressure in the vein is greater than that in the cannula.

I have also covered the practice of flushing the line which would cause a bolus of insulin to travel from the giving set and cannula into the blood stream and I have included the volume in my calculations. When undertaking blood sampling for a hypoglycaemia screen or indeed any blood test a venepuncture should be undertaken to obtain a free-flowing sample. Samples should not be taken from an intravenous cannula as this can be contaminated by the infusate in this case insulin. We have already noted that any dead space would be 0.45 ml which would contain 450 mU of insulin. If we assume that this was removed together with the blood sample which would probably have been 5 ml to undertake all the tests needed then the likely plasma insulin concentration that would be measured as a result would be 90 mU/l. It all depends whether this were done and if it were how much of the deadspace would have been cleared before the blood sample was drawn. Usually a 2 ml sample would be removed to clear the dead space and that 2ml sample discarded. To pursue this argument further the Hospital would need to provide information on how the hypoglycaemia screen samples were obtained with respect to independent venepuncture versus sampling from an indwelling catheter and in the case of the latter how much dead space would have been cleared'.

408. In oral evidence, Professor Hindmarsh said: '*The measurements on 24th and 28th show a reverse ratio where there is more insulin than C-peptide. That can occur in two situations – i) where you have no insulin being produced or b) or where you have a huge level of insulin anti-bodies (we can exclude that). The inform shows us the insulin from the pancreas was nil by July. By July, therefore, I do not think that he was producing insulin. From 14th March to 28th July the c peptide levels were at the lowest level detectable*'.

409. At E234 the guardian asked whether it was possible to state the amount of non-prescription insulin that was administered to result in this hypoglycaemic episode. Professor Hindmarsh replied:

'*The blood glucose was, prior to switch off of the insulin syringe pump at 20.10, 15.6 mU/l. At 21.00 the blood glucose was 4.6 mmol/l suggesting insulin action. By 22.00 the blood glucose had fallen to 1.4 mmol/l. Some of this initial insulin action may relate to the effects of residual insulin from the pump although a duration of 2 hours is a long time for the intravenous insulin bolus proposed. After 22.00 and through the night there was evidence of ongoing insulin action on the Libre download until around 02.00 on the 29th July 2022. This would be consistent with ultra-short or short acting insulin action although it is always difficult to exclude an effect of long-acting insulin in these situations. Looking at Figure 1 the data would fit with ultra-short or short acting insulin best. When using the subcutaneous route we have to use a different half-life the plasma terminal half-life to account for the fact that insulin is absorbed from the subcutaneous site. The plasma terminal half-life of insulin is 120 minutes. If we*

accept the 160 mU/l as the peak at 22.00 then we would expect at 02.00 there to be 40 mU/l of insulin in the circulation so overall slightly higher than depicted at time point in Figure 1 where we would place the 160 mU/l peak at 60 minutes on the time x-axis and the 40 mU/l value would be attained at 300 minutes on the x-axis slightly above the 20 mU/l obtained in the study. Note that in Figure 1b this implies that insulin action would be virtually over by 300 minutes and certainly by 360 minutes which tallies with the Libre data and clinical observations out to 04.00. To attain a peak of 90 mU/l on Figure 1 a dose of 0.2 Units/kg body weight of Novorapid was used so to attain a level of 160 mU/l (dose response is linear at these levels) would require 0.36 Units/kg or for AB approximately 8-9 Units of Novorapid insulin.'

410. A feature of the events of this day, therefore, is that the level of insulin in the blood screen was high (160 mU/l) and in the above passage he is saying that it would require about 8-9 units of Novorapid insulin to achieve it.

411. **Professor Hindmarsh's oral evidence about this day included**:

- '*In relation to 24th and 28th July – was the sample taken by venepuncture – if there was contamination on 24th and 28th, the assumptions that I have made would be questionable. However, having considered all options, I would also point out that we do also have evidence on those dates of insulin action in that the ketone and the fatty acids were very low and that implies insulin action. But whether there was contamination you would still have to explain why you had ongoing insulin action. It does not take away the fact of ongoing insulin action. I think that the measurements are valid. It is always useful to test out other options but I am reasonably certain that there was insulin present. The plasma concentration was 'striking' – I said that because for plasma to go over 60 mm/l is high– unless a very heavy carbohydrate meal. A reading of 160 mm/l is very high.*

- *A normal peripheral cannula is not good practice for a blood sample. We would always advocate using a separate site from the cannula. You can get samples out of a peripheral cannula and we do that frequently for other reasons. We would do it for a specific diagnostic reasons but it is possible to take a sample.*

- *If a blood sample was taken from a peripheral cannula and there was some contamination, the impact of this on a sample would be very hard to say. I can estimate what might be in the dead space but then it depends on how the sample was drawn and handled and on how much of the insulin might have stuck on the plastic. As I said earlier, we do have good evidence that there was insulin acting There is no doubt that there is some insulin around and given the time and what I estimated might be present, the reading is very high and cannot be explained by drawing on the cannula alone. You cannot have insulin action like that just by contamination.*

- *We know that the infusion stopped at 20:38 and that the screen was 22:20. It produced a reading of 160. I would expect his presentation to be affected by the 1.8 reading. If he was asleep he might be difficult to rouse and, if he were awake he would disorientated agitated, clammy, increased heartrate. There*

would be symptoms worthy of clinical note but, in this period of time, there was a large number of hypos and so the manifestations might not be as you would expect – cumulative hypos may supress symptoms.

- *Mr Goodwin asked: Can we eliminate possibility of cannula failing before the blood screen? Professor Hindmarsh replied: I don't get the feeling that there was any manipulation of the cannula. It seems as though the pump was running quite well. The alarm might take time to be triggered. I think that we can be fairly certain that delivery was happening. Since the blood glucose level was reducing it would imply that insulin was being delivered into the system.'*

412. **Professor Hindmarsh on differentials –** At the end of his cross examination by Mr Goodwin QC he gave this evidence (which I take from the Local Authority's closing submissions with gratitude for Ms Logan Green's typing ability):

- Professor Hindmarsh was asked, other than administration of insulin by the mother, what are the other possible differentials? Professor Hindmarsh answered:

> PH – 'I think probably I would say that I only suggested that the administration would be by a person unknown, I didn't name anybody. Nor would I. That is not my role. To get that insulin, we know it is produced in the body. It is Actrapid as Professor T has demonstrated. We have to have a source of which there are two. One is the pump system, the other would be a standard subcutaneous injection of Actrapid. Those are the two options available to us to explain the insulin concentration. You rightly dismissed the antibodies – that is out. That would be another explanation for a high plasma insulin concentration and low c-peptide. We have that removed from the argument. Then it is considering, is it artifact – that is where the insulin sample was from. There aren't any other obvious sources of Actrapid other than those two I have mentioned. I think that in order to have got that 160, some additional insulin had to come from somewhere. It is possible it was from a faulty cannula delivery system but it is equally possible it was given by persons unknown'.

- The court picked up on the possibility that the insulin had come from a faulty cannula system and asked Professor Hindmarsh to expand on this possibility. He stated:

> PH – 'We are talking about if there was any additional manipulation of the cannula because of concerns about its functioning and its ability to deliver insulin, it might have been that they tried to move the cannula. Sometimes the tip gets stuck against a valve in the venous system. Might wiggle it around a bit. That is one possible way. It could have been another flush to secure patency. I don't think so because that would have been reported. It is more likely that if there has been any attempt to reposition the cannula without actually removing it'.
>
> HHJ – 'Why would that lead to the reading that we see in the blood screen. Why is that relevant?'

PH – 'It would dislodge some insulin stuck under the plastic. But I doubt it would get… that 160.9 was about 2 hours roughly after the pump switch off. An hour and a half. But going back to get 160 at that point, if due to manipulation of the cannula at the time of switch off then we are talking a very high concentration of insulin indeed and that is probably unlikely'.

- Professor Hindmarsh further confirmed that in order to reach the 160 reading, there would have to be a very high concentration of insulin at the time of switch off and Professor Hindmarsh described it as "quite a leap of faith to think that could have happened. It is a possibility but I think it is unlikely."

- The court then asked Professor Hindmarsh to consider whether this was something that should realistically be considered? He responded:

PH – 'It is safe to discount that because we have seen other cannula failures. Whether there was manipulation to improve the flow I do not know. It would seem unlikely that it would just happen on that day of 28th and not on other occasions when we know the cannula has not functioned as well as we would want. It would be fairly safe in the absence of any information to the contrary, you can safely dismiss that as a reasonable alternative'.

- Finally, when asked by the court if the above analysis and conclusion [that is, as at E61] remained his view, Professor Hindmarsh responded "yes it does".

413. **The mother's evidence about 28th July 2021** –At C199 the mother says this about this day:

- '*In terms of how insulin may have ended up in AB's blood sample that night, I would like to know whether faults with the cannula could have led to residual insulin within the cannula, or within the cannula line, or under the cannula dressing, leaking back into his blood stream. Or, alternatively, whether the blood sample taken for the hypo screening at around 10:30pm that night, was taken via the broken cannula, which within itself, may have held insulin that then contaminated the blood sample. I do not recall how the blood sample was taken and do not know the mechanics of cannula function, so cannot really comment and I can only share my observations and thoughts. AB had been receiving Actrapid through the infusion pump throughout the day which was administered through the cannula inserted into his arm.*

- *As said before, a cannula failed on 25th July 2021 when it leaked Actrapid under AB's skin. On 27th July 2021, the cannula was observed leaking as the dressing was wet [I3749]. On the night of 28th July 2021, it was identified by the nurse that the cannula wasn't working [I3415], resulting in it having to be replaced with a new one in a different location. The nurse records that AB was recannulated at 2am [I3575]. Having looked at the cannula assessment records, for some reason, the cannula failing and being replaced that night has not been recorded. It is not known whether the cannula was flushed between the administration of the Actrapid and the first dose of Dex [I3750] and my recollection of that night isn't clear. 190.The nursing assessment note for this night can be found at [I3575] and the doctor on call, Dr J's handwritten record*

can be found at [I3414-I3415]. Unfortunately neither note records in detail why the cannula failed or the discussions I had with the nurse about whether it had failed or not. I recall asking the nurse a few times whether the cannula was ok after the Dex bolus had been given, as the dressing keeping it in place was very wet. The nurse questioned whether the wetness was due to AB sweating but that didn't seem like a fitting explanation to me. I can't recall whether the dressing was wet before the Dex was given, but I do recall that after it was given, we observed a build-up of fluid under the dressing holding the cannula in place. It was obvious the cannula was not working and we didn't know how much of the treatment was actually going in; the nurse agreed to get the doctor who came down and agreed it was broken and that a new cannula was needed.

- *It took about 40 minutes to get a new line into a vein, as AB was so distressed and none of his veins were co-operating. The only vein that could be used was in his foot. It was a really upsetting night; I query whether his level of distress could have been a contributing factor to his levels dipping again briefly later that night. I have never and would never, seek to subject my son to such physical pain and emotional distress. I found it incredibly upsetting to watch and it makes no sense that something I found so upsetting would be something I was also deliberately causing.*

- *If my memory serves me correctly, it was the morning of 29th July 2021, the day after the hypoglycaemic episode, that a consultant on the ward called "P", agreed that it was possible that AB's hypo may have been caused by residual insulin in the line leaking into AB's bloodstream. I have not seen this mentioned in any of the medical records or reports but clearly remember her saying it.*

- *I can see that the blood sample taken on 28th July 2021 ruled out the possibility of AB suffering from insulin autoimmune syndrome. I do not know whether the test carried out relates to all types of insulin or only the specific insulin he was receiving at that time (Actrapid). As far as I am aware, insulin autoimmune syndrome and Glycogen Storage disease are the only differential diagnoses considered by the doctors so far. From the strategy meeting minutes dated 4th August 2021, I can see that Dr B consulted medical literature to consider alternative explanations after he had referred the case to Children's Services. I feel like he had made his mind up about me at an early stage. He would shoot me or my family down if we ever asked a question about alternative explanations. I found him intimidating. He once put his hand up in a "stop speaking" type gesture at another doctor ("N") in front of us. N wanted to attend the ICPC but told us she wasn't invited. I will refer to her again at paragraph 250 of in my statement*'.

414. The mother says, rightly, at C197, that AB was high throughout the day and, as can be seen at I3696, the rate of infusion of Actrapid was changed five times between 14:00 hrs and 18:00 hrs. I required this question to be put in writing to the mother after she had been unable to continue with her oral evidence: '*On 28 July 2021 the Libre View shows that AB's blood sugar was high all day. The insulin infusion stopped at 20.38 and the hypo screen was done at 22.20 Did you give AB insulin on the 28 July 2021 believing that he needed it?*' She replied: '*No, I did not*.'

415. In interview she said: '*his line was breaking so I think the nurse said, you know, it was kind of -- it was lifting up and it was kind of leaking a bit. So we weren't sure, again, how much he was getting of it. We knew he needed a new line but she put it in anyway. So she carried on putting it in…it was quite wet, he probably did need a new one…So obviously she called the doctor….Obviously the doctor had to come and once he had another hypo, because he was going to do something called a hypo screening*'.

416. I have read the submissions of Mr Goodwin QC and Ms Barrett with considerable care and will not set them all out in this judgment. They end by saying this:

'*The court then pressed him on this point, resulting in subtle shifts in the language of possibility and probability. It was "probably unlikely" that the manipulation of the cannula in this way had resulted in a plasma insulin level of 160.9mmol/l approximately 1½ hours after the infusion stopped. It was "a possibility but unlikely". It was "probably safe to discount that" because other cannula failures had not caused the same problem (all XX by HHJ). We note however that that logic does not stand up to scrutiny. We simply do not know if previous cannula failures caused high plasma insulin levels because of the paucity of available hyposcreens and the hospital's failure to implement a rigorous blood testing regime. The only basis on which Professor Hindmarsh moved from accepting that cannula error was an equal possibility to "discounting" the theory was, therefore, unsupportable. When asked one final question by NGQC, the professor agreed that although this was not the likely explanation, it was "still possible". He would "love to do those kind of studies to advance further" his understanding in this area. In conclusion, even on an analysis of the medical evidence alone, (without bringing into play the wider canvas material), it therefore remains open to the court to find that the high plasma insulin reading on 28 July 2021 was caused by cannula error rather than maternal interference.*

The wider possibility of inadvertent hospital error was not dismissed by Professor Hindmarsh – "that is why one has to be quite careful and take those kinds of things into consideration, yes" (XX by M). We invite the court to give this the most careful thought when considering whether the local authority has proved its case in relation to 28 July 2021.'

417. **My conclusion** – I consider that Professor Hindmarsh's opinion was very thoroughly set out in his reports. In his oral evidence, he adhered to the views that he had expressed about this date. He considered that cannula contamination (which only arises as an issue relating to the blood screen if the blood was taken by a contaminated cannula) would be an unlikely explanation for an insulin level of the magnitude recorded in the screen – '*you cannot have insulin action like that just by contamination*'. He also said that '*going back to get 160 at that point, if due to manipulation of the cannula at the time of switch off, then we are talking about a very high concentration of insulin indeed and that is probably unlikely*'. I realise the phrase '*probably unlikely*' causes lexical difficulty which is why I asked him whether he adhered to the views that he expressed in his report which he confirmed he did. Although I accept that errors get made (and these have been identified helpfully by mother's counsel) there would have had to be significant failure by Dr J in taking the screen for it to have been contaminated as suggested.

418. I will now list the core of my reasoning as between systemic failure/contamination and unlawful administration.

419. First, there is no avoiding the fact that the bottom line of Professor Hindmarsh's opinion is that unlawful administration is the more probable outcome from the point of

view of his expert analysis. Not only is that very clear from his report but it is also the correct and overall summary of the opinion that he expressed in court. That, of itself, commands recognition, given the expertise of Professor Hindmarsh.

420. Second, I agree with his opinion. I have made sure that I read his report very thoroughly. I skimmed it and read it thoroughly twice when preparing for this case and then read it again before he gave evidence. I know its contents well. Overnight, during the break in his two days of evidence, I read his evidence from the first day and cross-related it to the report. I have studied his evidence again both before and during the writing of this judgment. Although I do not have the experience and expertise of Professor Hindmarsh in this complex field of medical science, and although it may sound impertinent when speaking of the work of such a renowned expert, I agree with the contents of his report. Essential parts of his reasoning can be found at E60-61 and at E228 in the passages that I have set out above. That reasoning has required, and has been given, very careful study and thought because it deals with complex issues.

421. Third, I regard system failure, including contamination of the cannula, screen or pumping system to be a highly improbable explanation for what occurred. I say that for these reasons:

i) It requires Dr J to have departed from good practice by using the cannula to draw the blood screen. I accept that it is possible that that occurred and, on the facts, no party has sought to exclude it as a possibility.

ii) It would require the cannula system to have failed at the time that the pump was stopped and the screen was taken. That, I accept again, is possible given the failure of the cannula on 26th, 27th and at about 04:00 a.m. on 29th July 2021. The failure would have to have gone unnoticed by Dr J.

iii) If contamination occurred at the time that the pump was turned off (20:38), its effects would have to have lasted, to the extent of the quantities of insulin found in the screen, until the time that the blood screen was taken (22:20). On the evidence I regard that as being highly unlikely.

iv) If contamination arose because the screen was taken from a contaminated site (e.g. from a site where there had been an accumulation of subcutaneous insulin in the region of the cannula), that would have to have gone unnoticed by Dr J and would have to have been in such a concentration as to explain the reading of 160 mU/l of insulin in the screen. I regard that as highly improbable.

v) If contamination arose at the time that the sample was taken, the insulin to cause the contamination would have to have come from some source. The pump had been disconnected for one hour and 42 minutes by then and so it could not be the source. There is no reason to think that there was any such new contaminating event that could have arisen then. Therefore contamination between the time of pump turn-off (20:38) and blood screen (22:20) seems to me to be highly improbable.

vi) Overall I think that it is highly improbable that contamination or failure of the system could explain the high reading of insulin that was found in the screen.

The finding of 160 mU/l takes this screen into a very different domain to the more limited screen that was performed in relation to 24th July 2021.

422. The insulin that was found was exogenous (see the glossary). It must have come from outside AB. AB's own insulin production (endogenous) would either have ceased or would have been undetectable, I accept. Therefore the 160 mU/l of insulin must have got into his body from outside.

423. I therefore find that the insulin that was found in the blood screen was administered covertly and wrongly by someone. I consider that there is no other logical explanation for it. I do not accept that the insulin might have come into AB's blood system through inadvertent error – that would mean that someone inadvertently administered insulin to him (probably, but not necessarily, after the pump was switched off); at its very height, that is speculative. It has no evidential or logical foundation. I do not think that the recognition that I give in the legal directions to the fact that medical science is a developing phenomenon and science cannot answer everything, is of any helpful application. The parameters of this case are clear and known. Exogenous insulin was found in AB's blood screen in quantities that are not controversial. The issue is: can the Local Authority prove how it got there?

424. On the evidence that I have heard, there is only one person who might have administered insulin to AB – the mother. There is simply no basis for suggesting that anyone else might have done so. I find that the mother would have had ample opportunity to do so and, if she so chose, would have had the means to do so. There were amounts of insulin in her home and she could easily have brought it to the hospital unnoticed.

425. I have taken into account all of the positive things that I have heard and found about the mother. I accept that the mother is a loving mother to AB and has been committed to his care in extremely demanding circumstances. Also, I have taken fully into account that this occasion is now the only occasion in which there is any sustainable allegation that she administered insulin to her son. But I have also found that there is a margin down the page in the life of this mother in which she keeps, and is able to keep, deeply emotional aspects of her functioning from view.

426. I have also considered carefully that it must be recognised that it is wrong to adopt a linear approach to the issues relating to this date because that could lead to a finding by default against the mother in a way that did not examine the competing factors that militate against a finding relating to her. I have spent a long time weighing up the competing possibilities in relation to this event and thinking them through as best I can.

427. Having done so, I find that the Local Authority has proved that there is only one logical and highly probable (i.e. more than just a mere balance of probability) conclusion. That is that the mother did administer insulin to him that night. She probably did so after the pump was switched off at 20:38. As a result, she caused his blood glucose levels to be dangerously low. There are many reasons why she may have done that (i.e. her reasoning), as I have already explained but, given her denials, it would be speculative for me to try to identify them at this stage, beyond that which I have said already.

428. I would also want to add that the more that I have thought about the above conclusion, the more obvious it has become to me. I have reviewed it a number of times when writing this judgment because this is a critical finding that will have considerable impact on this child, this mother and this case. I am deeply conscious of that.

429. I will now continue with the chronology.

430. **Enhanced supervision** On 29th July 2021, a decision was made that the 'enhanced supervision' should be put in place in the hospital. It remained in place until AB was discharged on 24th August 2021. The LibreView material about this period is at DM-J1011 to DM- J1021. It shows a much more stable pattern than before, I find. Of course there are still some peaks and troughs, but that is inevitable with diabetes. During the period from 30th July to 24th August (25 days), and ignoring double recordings of hypos (i.e. where two or more recordings relate to the same period of hypoglycaemia), I have counted about 17 hypos. In the three days of 16th to 18th July when in his mother's care (DM-J1007) he had at least 20. That great stability during the period of enhanced supervision was influenced, in part I accept, by the fact that the medical team were now heavily involved and were monitoring things very carefully. Also, his insulin regime was changed (from 30th July 2021 he was receiving Lantus and Novorapid injections). However, the contrast between this period and the periods in which he was in his mother's care speak for themselves.

431. Professor Hindmarsh says at E62:

'*The insulin regimen was switched on 30th July 2021 to Novorapid 1.5 Units with meals and Glargine 3 units per day. A strict enhanced surveillance programme was introduced. By the 2nd August the hypoglycaemic episodes had abated although there was one further episode on the 2nd at 20.00. A hypoglycaemia screen was obtained (Table 1). Blood glucose was 2.7 mmol/l and growth hormone and cortisol were again low. Plasma insulin was 4.3 mU/l which suggests either on-going insulin secretion by the beta cells (less likely as endogenous secretion should be switched off, unfortunately C-peptide was not measured) or exogenous human insulin administration but not as Novorapid as this cannot be measured in the assay used in [the local are]. There was then a progressive increase in insulin doses without any concomitant hypoglycaemia*'.

432. At E68, Professor Hindmarsh says: '*The introduction of the strict surveillance regimen was associated with a marked reduction in hypoglycaemic episodes on the Libre glucose sensor download from 30th July 2021 onwards. Occasional hypoglycaemic episodes were noted usually late mornings and nearly always associated with a high post breakfast glucose spike. This is not an uncommon problem in paediatric diabetes.'*

433. At E233, Professor Hindmarsh was asked: '*You have said that the introduction of the strict surveillance regimen was associated with a reduction in hypoglycaemic episodes. The strict surveillance regime was introduced at the same time that AB's insulin treatment plan changed. Please consider the extent to which the treatment plan rather than the surveillance is likely to have caused the reduction and provide any other relevant comment you wish*'.

434. He replied: '*The initial 24 hours of the strict surveillance regimen was associated with high blood glucose values and thereafter the insulin dosing was gradually increased so*

that by late August 2021 the total daily dose was more appropriate for someone of his size at 0.5 Units/kg/day. This was achieved without a return to the persistent hypoglycaemic episodes that had occurred previously. The lowest glucose noted on the Libre and checked by finger prick blood glucose testing on only one occasion was 2.9 mmol/l (Tuesday 24 August 2021) with the majority in the 3.5-3.9 mmol/l range which is very mild.'

435. The mother says, at C202, that she did not know that she was under surveillance and that Dr B told her that the hospital would be keeping a closer eye on AB's blood sugar levels. She goes on to say at that page:

'*In a matter of days after the enhanced observation was started, AB's treatment plan was changed to subcutaneous injections and he received different types of Insulin, Novorapid and Lantus. I do not know why the treatment plan was changed. He seemed to respond well to the new treatment as he had mainly had mild hypos and highs until 3rd September 2021, which was when he experienced his next difficult-to-treat hypo. Dr B says that the unusual hypos stopped because of the surveillance, but they might also have stopped because AB was on a treatment plan that worked better for him better. He never worked well on the insulin pump or infusion pump. The type of insulin he was put on was the same that he had had back in November 2020 and which he had done well on up until it was changed in March 2021.*

I would also like to add that after the 1:1 enhanced observation was put in place, AB received a more attention from the doctors and nurses. There was more scrutiny of exactly what he was eating, drinking and amount of urine he was passing (we were weighing it). It is recorded in an email from the specialist nurse that Dr B was reviewing AB's insulin requirements every day and making adjustments. Prior to the enhanced observations lots of different doctors were involved in AB's care, so I query whether having one doctor monitoring everything made a bit of a difference too.

It was also around this time that I was told by his paediatric diabetes specialist nurse Nurse S that I shouldn't be giving him snacks and that he should instead be eating 3 meals so it would be easier to keep track of his insulin requirements [I3419]. This advice conflicted with my understanding that I was supposed to keep him snacked up. He would always have breakfast, lunch and dinner and if he was low in between, I would allow him a snack. Under the enhanced observation, I can see that AB stopped having food between meals and instead got better at eating three set meals a day; he was under a stricter regime so unless it was in his plan, he wasn't allowed it [I3471].

….[C204] My concern that Dr B has given greater weight to incidents that support his theory is evidenced by the fact that whilst under the enhanced observation, AB had hypos on August 2nd [I3591], 3rd [I3594], 4th [I3597], 5th [I3503], 6th [I3608], 8th [I3614], 12th [I3587], 13th [I3628], 16th [I3640], 20th [I3656]. Dr B has described these hypos as expected and easily treatable, yet some of them required more than one treatment of Glucogel or more than one round of jelly babies to resolve. He also says that some of the hypos were linked to AB doing exercise in the hospital garden, yet he didn't take exercise into consideration for the times AB had gone hypo whilst at hospital prior to the enhanced observation being in place. AB was much more active at home than he was in the hospital, at home he is full of beans all the time, so whatever level of insulin was worked out in hospital as being appropriate, often wasn't right for

when we returned home. His level of daily activity outside of hospital was much less predictable than it was during the admissions'.

436. At SB-C53 Dr G says:

- '*A Multi-Professional meeting involving the Hospital's Safeguarding Team was held on the 29th July 2021 following concerns about repeat episodes of severe hypoglycaemia and the laboratory report confirming inappropriately raised levels of insulin. Following this, a decision was taken for AB to be under enhanced 1:1 supervision on 29th July. During this time a health care professional was present continuously at AB's bedside ensuring that AB was never alone with his mother at any time. There were no episodes of documented or reported hypoglycaemia that occurred during the night of 29th of July and AB was recommenced on subcutaneous insulin injections the following day.*

- *The enhanced supervision continued until 24th August with healthcare professionals monitoring AB continuously during the night time and AB's extended family members during the day. During this period although AB experienced mild hypoglycaemia, these episodes are expected in patients with type 1 diabetes and is often due to slight mismatch between the food eaten and the insulin that is given to match the carbohydrate content in the food and also his activity levels. AB's subcutaneous insulin injection doses was gradually increased in order to correct high blood glucose levels and during the time of discharge on 24th August 2021 AB was receiving a total Insulin dose of 14 units when compared to 1 unit or less when he was admitted four weeks before. The discharge total daily dose insulin of 14 units/day was appropriate in a boy of AB's age and size and after discharge, his insulin requirements was constantly reviewed by the members of the multidisciplinary Team and were changed appropriately for his blood sugar levels*'.

437. Nurse S wrote to those involved in the care of AB to say: '*D and I have been to speak with mum and the enhanced one to one observation has now commenced. The ward staff are clear of the documentation log which they need to complete during this time… D has written a clear plan in AB's notes regarding use of the sliding scale.'*

438. Dr B says at E8: '*…a decision was taken to begin enhanced supervision on 29th July. From that date, a healthcare professional was continuously present at AB's bedside ensuring that the Mother was never alone with AB at any time. No hypoglycaemia occurred overnight on 29th July and he was able to recommence regular subcutaneous injections of insulin the following day. AB remained in hospital until 24th August, during which time enhanced supervision was maintained initially with healthcare professionals and then by members of AB's extended family during the day and healthcare professionals overnight. Over this period, AB has experienced regular, mild and readily correctible episodes of hypoglycaemia. These episodes can be explained by slight mismatches between food eaten, activity undertaken and insulin action and are common in all children with Type 1 Diabetes. Since resuming subcutaneous insulin injections AB has required a gradual increase in his daily dose of insulin in order to correct higher than normal blood glucose levels*'.

439. On 2nd August 2021 a referral was made to Children's Services by Dr B [I3777] in which he said: '*On 28/07 at 23:43 AB had a very low blood glucose level despite his*

intravenous insulin infusion having been stopped over 2 hours earlier. A blood sample at that time identified a very high level of insulin in AB's blood suggesting that he had received an (unprescribed) injection of insulin since the infusion was stopped which had resulted in the fall in his blood glucose. To safeguard AB's safety enhanced surveillance 24/7 requiring 1:1 nursing supervision was implemented on 30/7. Since then AB has had no further falls in blood glucose levels overnight. Indeed his insulin dose has needed to be increased to manage high blood glucose levels. Consequently our concerns about Factitious and Induced illness (FII) with AB's mother as the potential perpetrator remain. Such high level surveillance cannot continue indefinitely without our concerns being raised with mum hence the need for an urgent strategy meeting'.

440. There was a further blood screen that was subjected to an assay (testing) on 2nd August, to which I have already referred. Although issues relating to that screen were explored in evidence, findings are not sought against the mother in relation to it. The evidence of Professor Hindmarsh would not support such findings and the assay was not specific enough to base any forensic evaluation for the purposes of this judgment.

441. On 3rd August 2021, Nurse S and Dr B met with the mother [SB-C25] to inform her of the safeguarding referral which had been made '*and the concerns of the hypoglycaemia blood screen which showed evidence of insulin in AB's blood, despite not having had prescribed insulin for some time. It was explained to mum that we were concerned as to how AB came to have insulin in his body'*.

442. Dr B's note of this meeting is at I3438. It reads: '*Mum informed strategy meeting tomorrow at 11:00 AM. Reason for meeting is our escalating concern about AB's blood glucose levels, especially the prolonged period of hypoglycaemia overnight on 28th July which was refractory to Rx (i.e. medical prescription). Picture consistent with strong insulin action, confirmed by measurement of high insulin levels in AB's blood. Unclear where/ when AB given the insulin as infusion pump stopped at 2038 hours . Mum advised to go home to meet with social work team ahead of strategy meeting. Mum naturally upset and concerned that AB may be taken from her care will stop clearly denies giving AB any insulin.'*

443. The mother and AB met with Dr A at 11:45 [I3437]. The note reads: '*Mum told me a little bit today about recent events such as the move to 1:1 observation and how initially she had felt very angry and defensive but feels more accepting of this now. I reinforced that we are here to support, not to judge, and all want to get a better understanding of what is going on. This is a good opportunity also for mum to step back and focus on own wellbeing. Mum said she has been able to do this and has been going home for a few hours every day to have a break. I encouraged her to continue with this and for mum's mum also to continue to take over when possible.'* I recognise that this was a particularly difficult and frightening time for this mother. For AB, although he was once again in hospital, he was at least relieved from the effects of the extremes of hyperglycaemia and hypoglycaemia that he had experienced previously.

444. On the 4th August 2021 there was a multi-agency strategy meeting where it was decided that supervision needed to continue. At I3439 the following was recorded during a ward round: '*Mum expressed sadness about the discussion yesterday and is stressed. She reiterated that she wants to work with the diabetes team.'* On 10th August

2021 [I3451] Dr A met with AB and had a private conversation with him; in her evidence she said that he did not tell her anything of note and was '*warmly reunited with Mum on her return*'. On 5th August 2021 Dr A wrote [I3441]: '*I let Mum know that FII would be a possibility.*' I have already set out other aspects of the evidence that I heard about that meeting.

445. On 24th August 2021, AB was discharged from hospital. At E8 Dr B says: *'At discharge on August 24th, AB was receiving 14 units of insulin daily compared with 1 unit or less when admitted only 4 weeks earlier. AB's dose of insulin at discharge is typical of that required in a boy of his age and size and duration of diabetes. Such a rapid change in insulin requirement is impossible to explain and provides a further indication that AB must have been receiving additional insulin injections prior to this admission'*. The last sentence is not a sustained allegation before me, save as I have set out. However, it does show how the case was viewed in the hospital at the time.

446. The discharge summary is at I3969. There was also a further discussion about obtaining a second opinion, either from Professor S (I3425 - I understand this to be Professor S, a Professor of Diabetes and Metabolic Endocrinology in the Medical School) or Professor JW (of Cardiff). Dr B said that a formal second opinion was not taken because '*we had discussed within the team and all of us had the same opinion about the case and so we did not think that there needed to be an external opinion. We all agreed that there were some unusual features for which there was no explanation. The reason for the explanation became clearer when we had the result from the screen of the blood taken on 28th July and also that, under supervision, there were not hypos.'* The report of Professor Hindmarsh, which has had such an influence on the case, did not come into being until 16th January 2022.

447. Professor Hindmarsh gives a stark summary of how things were viewed at this point [E62]: '*A Strategy Meeting was held on the 24th August 2021 (I3541) which concluded that the mother had administered insulin on numerous occasions. As Dr B, Consultant Paediatric Diabetologist, pointed out hyperinsulinaemic hypoglycaemia is a dangerous condition. The brain is reliant on a constant supply of glucose for energy and normal function. The brain only has sufficient stores of glycogen to convert to glucose to last for 20 minutes. Thereafter the brain will switch to ketone bodies such as 3-betahydroxybutyrate as an alternative energy source. In non-ketotic hyperinsulinaemic hypoglycaemia glucose is no longer available in adequate amounts to maintain normal brain function and the production of ketones is suppressed by the high circulating insulin concentration. This can lead to seizures, brain cell death, coma and on occasions death. As a result of the Strategy Meeting AB would be allowed to the maternal home however with grandparents in charge of treatment.'*

448. Dr G was referred in evidence to the document at [I3541]. It is Dr B's entry in the medical notes in which Dr B records that the conclusion of the strategy meeting was that the mother had administered insulin on 'multiple occasions'. Dr G said: '*that conclusion was the shared conclusion of professionals present at the strategy meeting. It was the opinion of the group. I was then asked to feed it back to the mother and family the outcome of the meeting. The medical information that I gave was essential to that meeting. There was one outstanding investigation which I explained to the mother over the next 24 hours – the results of a blood sample measuring insulin anti-bodies – these can cause the delay of action of insulin after it is administered – That is*

a very rare condition (only one or two case reports). Subsequently no antibodies were found in his blood and so that alternative explanation was ruled out finally.'

449. **24th August 2021 to 3rd September 2021** – It is during this period that AB was back living in the home of MGPs in Whitchurch. The mother and brother also lived there at the time. There was a strict 'safety plan' in place. This period leads to the ninth allegation on the Local Authority's schedule which is pleaded in these terms: '*AB was readmitted to hospital on 3 September 2021 following episodes of hypoglycaemia whilst in the mother's care.'*

450. MGM says in her statement: '*we did absolutely everything that was asked of us and complied with everything that had been out in place. All of the insulin was locked away and the Mother wasn't helping with AB's insulin nor did she know how to access the insulin. The Mother was being really good about the rules too and would leave the room when I did the insulin, as she wanted to do everything properly. I am absolutely certain that AB was not left unsupervised at any point.'*

451. The mother says at C205:

'*…After AB was discharged home in August 2021, a Safety Plan was put in place so that my contact was supervised at all times by my family members and his medication kept in a locked box and not administered at all by me. All of AB's medication and medical equipment was kept in locked boxes provided by the social worker and the key was kept hidden from me. I did not have access to or possession of any insulin or syringes. The social worker undertook four unannounced visits during this period and has confirmed that we were adhering to the safety plan. The first time she visited she checked that the medication was in the box – and, of course, it was.*

As part of the requirements requested of us by the hospital and social services, my family were asked to keep a log of what food AB ate and how much. This food diary was kept from 24th August to 3rd September 2021 and was taken by the police on 4th September 2021 during their search of our property. We had also been asked to keep an insulin diary, recording what time he was given his insulin, the amount he was given, and by whom. The family member giving him his insulin would need to sign the diary to confirm it was them who had administered it. For some reason, the police did not take this insulin diary when they searched our home on 4th September 2021 and I only discovered it some weeks later. I still have it in my possession and exhibit it here to my statement (EXH/BR/5) – [it is at C235 – I have looked at it].

During the period at home from 24th August 2021 to the date that he was next admitted to hospital (3rd September 2021), AB's levels were monitored by the diabetes team remotely, as we continued to upload the Libre and Diasend data every few days. My mum spoke regularly to the diabetes nurse Nurse S and it was noted that AB was above his target range for most of that period but with some hypos mid-morning. Nurse S provided guidance to my mum via telephone and their conversations are recorded at [I4328] to [I4337].

My mum was asked to bring AB into hospital the night of 3rd September 2021 following a hypo at 9:27pm which was had been unusually difficult to correct. Friday

3rd September 2021 itself was a normal regular day in my view, aside from the fact that AB had been climbing that morning. This was the first time he had ever been.'

452. In her oral evidence MGM said:

- '*There was a safety plan in August and September. I understood it. The Mother did not know how to access insulin during the plan. We had some locked metal boxes and so in there we had a box in the fridge which had insulin in and a box in the fridge. They were locked at all times and she did not know where the key was. None of us told her and she was never there when we accessed it. During the safety plan the Mother did not have time alone with AB. If [the brothers] were in the house and I went to the loo, one of them would be in the room where they could see AB. If [the brothers] were not around, I would take AB upstairs with me. Usually he would sit on the landing or on our bed. Our toilet door can see down the staircase. If it was just me, the Mother and AB, I would leave the loo door open. If [the brothers] were in the house, I would close the loo door.*

- *I was not careless during the safety plan. It is not possible that I left him unsupervised on occasions. There is no prospect that the Mother could have run upstairs and injected him when I was in the loo. I would have expected AB to tell me, if the Mother injected him. The Mother's attitude to the safety plan was to be 100% onboard – we wanted AB to stay with us.*

- *I do not believe that the Mother injected him secretly during this time. I am a law abider*'.

453. I think that it is informative to look at the LibreView and Diasend material for this period. I will look at the material relating to 3rd September 2021 when I give focal consideration to that date.

454. The LibreView material is at DM-J1022-1024. The Diasend material is at DM-I36. There is no comparative Diasend material for the period when AB was in hospital; there is comparative LibreView material, of course. Initially the LibreView material follows a similar pattern to when AB was in hospital (DM-J1022). Then, as might be expected due to the greater exercise regime and change of diet, there is a change in which more of the readings, in fact, are within the grey zone [DM-J1022-1023] albeit there are some mild hypos. There are some highs and lows on 30th August 2021 but, in my reading of the chart, nothing of outstanding note. There were quite a few highs and a low of 3.0 on 31st August and 1st September 2021 [DM-J1024] but, again, there is nothing of outstanding note. The Diasend material at DM-I36 shows mostly green readings (i.e. normal) from 24th to 30th August 2021 albeit that there are lows of 2.9 (27/8), 2.1 (29/8), 2.4 (29/8) and 2.9 (31/8).

455. Plainly, a careful eye was being kept on AB's well-being. That can be seen from the nursing logs at I4337 to 4329. Those logs record frequent communications between the specialist nursing team at the hospital and the family and cover the following dates: 24th, 26th, 27th and 31st August 2021 and then September 1st, 2nd and 3rd. The gap on the 28th, 29th and 30th August 2021 would be for the weekend and the bank holiday which would have been covered by the out of hours team (I have not checked about communication relating to that period but it is not of importance to this judgment).

456. On 27th August 2021, Nurse G wrote to the maternal grandmother, saying [I4020] '*well done for your efforts looking after AB. As we discussed, his blood levels are likely to be different now that he is at home…as his activity levels are different and the food that he is eating is different… he had a hypo of 2.9 mmol this a.m. at 10:41. You said that he had not been doing anything unusual, just sitting on the computer / tv? His level 2 hours after breakfast was high…hypo – you treated this with 3 jelly babies and this allowed the blood glucose to rise to 5.5…well done, this worked well…school – we are trying to organise a date to train staff so AB can return to school as soon as is safe.'*

457. In my opinion there is no evidence that the safety plan was not observed by the mother and her family. At times the enquiry descended into the absurd. The idea that the mother might, surreptitiously, have come up the stairs while MGM was on the loo in order to give AB a jab of insulin does not bear further examination. That is just not this case or this family. On the whole, I find, in the period of 24th August to 2nd September 2021, AB's diabetes was managed reasonably. That is hardly surprising since everyone was on high alert and it would have been manifest folly for anyone to step out of line from the safety plan.

458. I now turn to the 3rd September 2021, the day when AB returned to hospital.

459. **3rd September 2021 –** this is the day upon which AB went climbing (or 'bouldering' as the mother called it in her police interview) with the brother. He did not have an appetite at supper time. He was mildly hypoglycaemic at about 21:00 hrs and then became hyperglycaemic. He was admitted to hospital later that night where the hyperglycaemic reading on the LibreView chart went up to 27.1 at one stage [DM-J1025]. There is one point in the mother's evidence where she had to answer for different accounts of her actions at bedtime.

460. Before I get into the detail of this date, I do wish to observe that:

    i) The only counsel to mention this date at all in closing submissions were counsel for the mother. The guardian does not suggest findings should be made in relation to this date and, in their counsels' submission do not dedicate any time to it (for good reason), beyond saying that it is understood that the Local Authority still seeks a finding in relation to it. I cannot find any reference to it in the Local Authority's closing submission. I have no note of anyone raising it in their oral addresses.

    ii) Professor Hindmarsh's evidence would not support any adverse finding about it.

    iii) Dr G says at SB-C53: '*AB was admitted on 3rd September 2021 when he was brought by his grandmother with concerns about low blood sugar levels on the evening of the 3rd September when the blood sugar levels were ranging between 3.5 to 3.7mmol/L. The low blood glucose levels were felt to be secondary to change in AB's increased activity level. He was monitored for a few days in the hospital and was discharged back to*

remain under his dad's care after a strategy meeting.' That would not support any adverse finding about it, either.

iv) The wording of the pleaded ninth allegation is not, on its face, a threshold allegation ('*AB was readmitted to hospital on 3 September 2021 following episodes of hypoglycaemia whilst in the mother's care*'*)*. It is correct that AB returned to hospital on 3rd September. It is not correct that AB was in the mother's care, by reason of the safety plan. The pleaded allegation does not state how it is asserted that the mother's care was not that which 'it would be reasonable to expect a parent to give' and does not deal with attributability.

i) There is nothing of note about the afternoon hypo. It was discussed with the paediatric diabetes nurse, Nurse A at 16:10 – I4328 where the nurse noted: '*Phone call to MGM for Review as per plan. The mid-morning fruit snack has indeed avoided the pre-lunch hypo. However AB did have a hypo after lunch. He had a sausage sandwich and pack of crisps and ate it all. MGM noted that he went to a climbing centre this morning and was active. No changes made. Looking at the hypos it seems that the hypo remedy could be reduced slightly to avoid the post hypo hyperglycaemia. I will pass this on to Nurse S to make this decision next week as she knows the family well. no changes made today currently having 3 jelly babies and a biscuit.'*

ii) The later hyperglycaemia is explained by the fact that MGM, I accept, gave AB *at least* three successive lots of jelly babies in order to increase his blood glucose levels. I think that she may well have given them in rather too quick succession but did so with good motives and, although I do find it somewhat surprising in context that so many jelly babies were given, nothing turns on the point. Further, I accept, it was MGM who gave the jelly babies and not the mother.

iii) As asked by counsel for the mother, I accept the evidence that the grandmother gave about this date.

461. Counsel for the mother submitted as follows:

i) '*Professor Hindmarsh's analysis in relation to 03 September 2021 did not support a finding that the safety plan was breached that day. Even without his expert analysis, such a finding would not have been possible without disbelieving the grandmother's evidence about her supervision. It was unsurprising that she could not recall every detail of her and the mother's movements that day. She could however say, with confidence, that AB had been constantly supervised, even when she was using the loo. We invite the court to accept her evidence.*

ii) *In his addendum report Professor Hindmarsh concluded that "it is possible that the hypoglycaemia resulted from undertaking a new exercise earlier in the day and a possible mismatch between insulin doses and food intake. The time course is consistent with the*

administration of ultrashort acting insulin at 16.30" [E232]. The handwritten insulin diary signed by the grandmother shows short-acting insulin administered at 4.26pm [C241]. The 03 September 2021 hypo episode must therefore be marked down as an episode of troubling blood sugar instability for which the mother cannot have been responsible'.

462. Professor Hindmarsh said in evidence '*I did not find any evidence of covert administration of insulin in September. The doses were not unusual. Probably quite appropriate for someone of his age and size. I don't think that the low figures that were recorded imply inappropriate administration of insulin. That deals with September.*' He adhered to what he had written at E231 (last paragraph): '*The hypoglycaemic episodes were generally mild although the interventions with Jelly Babies may have prevented them becoming more serious. The reasons for developing hypoglycaemia in type 1 diabetes have been presented in my report (Figure 3). It is possible that the hypoglycaemia resulted from undertaking a new exercise earlier in the day and possible mismatch between insulin doses and food intake. The time course is consistent with the administration of ultrashort acting insulin at 16.30.*' That suggestion of administration of insulin at about 16:30 is supported by the document that Mr Goodwin QC and Ms Barrett drew to my attention at C241.

463. The LibreView chart for that day is at J1025. There were three hypos. There was a mild hypo of 3.8 at about 05:00 hrs. There was another hypo (of 3.7) after lunch at 14:00 and another one (3.8) at 21:15. The first two hypos resolved immediately. The last hypo lasted for about an hour. For most of the day the readings were relatively stable with periods of mild hyperglycaemia after breakfast and at teatime with a rise to 19.6 and beyond towards midnight with his blood glucose levels remaining high until brought down in hospital on 4th. On 3rd September 2021 there were regular scans.

464. The Diasend material at DM-I137 shows the brief hypo at 14:00 (3.4 reading) and then a cluster of hypos of between 3.5 and 3.7 at 21:00 to 22:00 hrs.

465. The mother gives this account of the events of 3rd September in her statement at C206 (I underline the point about her accounts being inconsistent):

- '*The morning of 3rd September 2021, AB was given 2.5 units of Novorapid (short acting insulin) before breakfast at 6:46am by my mum (see insulin diary). He then had 5 units of his long-acting insulin, Lantus, by injection at 8:45am by my mum (see insulin diary). That morning, AB went climbing at "The Climbing Academy" with my brother at about 10am whilst my mum and I sat in the café. They were climbing for about an hour. I can see that my mum told Nurse A, the diabetes specialist nurse, by telephone at 16:13 that day that he had had a piece of fruit as a snack pre-lunch and a sausage sandwich and crisps for lunch [I4328]. I don't personally remember what he ate but if that is what my mum said he had, then I have no reason to dispute it. The food records that my mum and I were keeping that were subsequently taken by the police should also record what he ate.*

- *I believe that we had lunch at home and I can see from the insulin diary that my mum gave AB 3.5 units of Novorapid at 12:18pm; the Novorapid was given before lunch so we would have had lunch at about 10-15 minutes after his*

insulin. My eldest brother and his partner came over with my nephew aged one. AB spent the day at home with us, playing, play fighting with my brother (which is something they often did) and playing on the x-box together.

- *Having looked at the Diasend records, I can see that at 2:15pm, he had a small hypo (blood sugar level 3.4) but came straight back up after 3 jelly babies and was 5.3 by 2:31pm. At around 4pm, I left the house to give my friend and her children a lift to her ex-partner's house. I believe I was out of the house until about 4:30pm.*

- *The Diasend records show that at 4:26pm, he was 14.4 (so slightly high). This Diasend reading would have been taken by my mum just before his tea. He was given 3.5 units of Novorapid at 4:26pm by my mum (see insulin diary). I believe I returned to the house at around 4:30pm, around the time that he was just being given his tea.*

- *For his tea, my mum had made home-made cottage pie. Although usually he liked cottage pie, he was refusing to eat it, so instead he was given bread and butter, crisps and a yoghurt ("Muchbunch" variety). AB can be a really fussy eater so if he ever refused to eat a meal, he might be given these foods. Most of the time he ate home-made balanced meals and it was only sometimes that he would refuse his dinner. He must have been given the right amount of carbs anyway as two hours later at 6:32pm he was 9.8, which is perfect.*

- *Later that evening, a close friend asked me to give her friend a lift to a prom in town, so I remember leaving the house by about 5:45pm. I didn't get back until just after 7pm. When I arrived home, AB was getting ready for bed. I can't remember if I was involved in his bath that night or not (he had a bath every night before bed). I recall that it was my mum who was supervising the bedtime routine but I can't exactly remember who did what. Usually we would watch an episode of something together, such as the TV show for children called "Clarence". <u>I recall that my Mum and I stayed in the bedroom together whilst AB fell asleep on his bed. He was on his bed and my mum and I were on a separate bed which is placed next to his. I remember holding his hand as he fell asleep.</u>*

- *After he had fallen asleep, I left the room and went into my mum's bedroom and popped on the telly and got ready for bed myself. Under the Safety Plan I was not allowed to sleep in the same room as AB so I had been sleeping in my mum's bedroom. As my dad works night shifts, that bedroom would be empty at night. My mum had been sleeping where I usually slept, in AB's bedroom on the second bed.*

- *It was at 9:27pm that my mum woke me up as his Libre alarm was going off. She finger pricked him with me in the room, which confirmed he was hypo with level of 3.7. She treated him with 3 jelly babies. At 9:44pm, he was 3.6, so she treated him with three further jelly babies. At 10pm, he was 3.7, so he had 3 more jelly babies. At this point we made a decision to ring the out of hours doctor. The doctor asked us to check his blood glucose levels again on the phone and they were only 3.5 so he was given another three jelly babies. At*

10:24pm, he was 3.5 so he was given 3 jelly babies and we called the out of hours team again who advised to give him another round of jelly babies which we did [I4103]. We checked him again at 10:45pm and he was 10.2. My mum had been treating the hypo with 3 jelly babies each time and it required 5 rounds in total to bring him up, something which had never happened before. During this time, I was speaking to AB trying to wake him up properly; he wasn't unresponsive and was awake enough to be able to eat the jelly babies. During the first few 15 minute waits, I was going back into my mum's bedroom to get some rest. I hadn't expected it to take this amount of time to bring his levels up, so had kept going back into the separate bedroom thinking I could get some rest.

- *At 10:45pm, he came up to 10.2, which is a little bit high; it was quite a big jump in 20 minutes. It was like the effect of the jelly babies suddenly kicked in. There seemed to be a delay in action, but once his bloods came up, they stayed up and didn't drop again. I do not know why it took over an hour to resolve the hypo. Considering the amount of jelly babies he had eaten, we were expecting him to be much higher than 10.2 and indeed by the time we arrived at A & E at 11:45pm (at the request of the doctors), his bloods were 22.6 [I4079].*

- *The diabetes team asked us to bring him in, so I dropped my mum and AB off at the hospital but did not go in myself as I was not permitted to enter the hospital with him. That night I couldn't sleep, as I was so anxious about what social services would say about him being back in hospital again.*

- *My mum is willing to provide a written statement confirming I was not left alone with AB even for a second that day*'.

466. In oral evidence the mother said that she could remember coming back at about 7 p.m. She said: '*In my statement, at para 221, I say that I remember staying in the bedroom with my mother and holding his hand while he fell asleep…That is the truth. It is not what I said in her police interview at H63. I had been in a cell for 12 hours.'*

467. The account at SB-H63 was this:

> '*A: So, last night…I went to bed a bit more earlier than usual, last night. Obviously my mum puts him to bed-*
>
> *Q. Yeah.*
>
> *A. ---'cause she sleeps with him now.*
>
> *Q. Okay.*
>
> *A: Obviously I said goodnight to him, gave him a kiss and that and obviously it's quite hard because he gets upset and in these nights, but we talk about it and I try and make sure he has a clear understanding---*
>
> *Q. Mm-hm.*

A. ---about kind of what's going on, because I don't want to, you know, not give him anything, you know, it's a weird time for him and for me and for everyone, so---

Q. Yeah.

A. ---he is six years old, you know, and he is starting to understand things.

Q. Okay.

A. And he's not stupid, bless him. So I went to bed a bit earlier and he's normally asleep, I think Mum said he was asleep by about, by about half past 8, I think'.

468. It was put to her: '*there is a lot of detail there…this is the day afterwards. Were you telling the truth to the police when you said you went to bed a bit earlier than AB?'*

469. She replied: '*I did go to bed earlier…I can see what I said in the interview…I don't know why I told the police that I wasn't there when AB fell asleep. I was scared at the time of the interview. I have never been interviewed before. It was scary. I was very scared and it is hard to remember what was going through my mind. I was not alone with AB at any point that night. The interview account is wrong. The statement account is correct.'*

470. Recollecting the Lucas direction, I find that the mother did lie to the police in the account that she gave at SB-H63. She lied because she did not want the police to know that she had been with AB when he fell asleep, albeit that her mother was also there. I find that she wanted to give a picture of having distanced herself from AB that night, fearful of how an admission that she had been with him when he went to sleep might be viewed. Her lie does not import with it any misconduct towards AB. The mother did nothing wrong that night. She was not alone with AB.

471. In her statement, MGM describes how the brother had taken AB climbing that day. Later that day, she says, they had a family meal of shepherd's pie, which AB usually liked. That day he refused to eat it and had crisps and toast instead. She says that ' *the Mother had gone out an came back about 7-ish'*. She was asked in oral evidence what the Mother did next; she said that she had had difficulty remembering. She said that she, MGM, took AB upstairs at about 8 p.m. She said that the Mother was tired and so she went to bed before AB fell asleep (that is different to the mother's account).

472. MGM said: '*I am not aware that the Mother has given different accounts of what she did that night. She would have come into the room to say goodnight to AB and then, I think, she went to bed...I can't remember whether I bathed AB that night. He had a bath every day. The Mother did not bathe him that night. The Mother would bathe him at times under my supervision. It is possible that the Mother helped to do so that night. It is not possible that the Mother spent time with AB that night on her own*'.

473. MGM said that the alarm on the sensor went off at about 9.30 p.m. [para 7 of her statement]. She tested him and he was hypo so she gave him jelly babies three times as his blood sugar levels did not appear to be coming up. She rang the hospital who said

that AB should come in. Before they left, his blood sugar level rose to 11. She surmises that '*Where he was eating the sweets so slowly it was taking longer for him to come up, then they all worked at once it seemed . I took him in that night as requested and by the time we arrived, he had gone high because of all the Jelly babies'*.

474. In her police interview at SB-H66 the mother says that, after the alarm went off that evening, the grandmother called her in and, between them, they gave AB six separate treatments of three jelly babies. They then gave him a digestive biscuit. When they rang the hospital they were advised to bring AB in.

475. In the words of Professor Hindmarsh, that deals with 3rd September. There is nothing of substance in the ninth allegation in the schedule and I reject it.

476. **3rd to 7th September 2021 –** AB remained in hospital. His blood glucose levels can be seen at DM-J1025. They stabilised, albeit that there were still some ups and downs. On 5th September there was a hyperglycaemic reading of 19.6 and some hypoglycaemic readings at 18:00-19:00 (3.3 and 3.8). I note that on the 7th, when he was discharged to the father, he had blood glucose levels in the 20's [DM-J1026].

477. On 4th September 2021, the police came to the home of the maternal grandparents, where the mother was living, and searched it and the mother's car. No insulin was found [C208]. The mother was arrested at home by the police at around 10.55am, interviewed and released around 8.40pm that night. The transcript of her interview is at SB-H4. The police officers told the mother [SB-H9] that '*The reason I needed to arrest you for that is because the health and social care…that there are some suspicions that you have been administering extra insulin…to AB, okay, causing him to become even more unwell than he is with his current condition. This is because whilst he has been at hospital his blood glucose levels have dropped repeatedly overnight. When the hospital has stopped intravenous insulin this has still happened, and then they've introduced one-to-one nursing care and those instances have stopped, so they have become worried and suspicious, alerted us, and this is why we now do need to investigate exactly what is happening.'*

478. **7th September 2021 and after** - On 7th September 2021**,** AB went to live with his father. At SB-C26 Nurse S says: *'Since in The Father's's care, AB has presented as a typical child with diabetes; having high blood sugar levels due to various common factors , blood ketones when unwell which have resolved with standard sickness advice and has responded to hypoglycaemia with simple sugar treatments. AB's diabetes has responded in a way which is normal when compared with that of his peers with diabetes. AB has been attending school, no longer uses a pushchair nor has a bottle. AB is now on the standard insulin regime try a pen injection which all of our diabetes patients commence at diagnosis. There have been no hospital admissions since in The Father's care.'*

479. When the father gave evidence, he said in answer to questions from the Local Authority that AB had not had any significant hypos in his care, had not been hospitalised and there were no '*hypers which lasted for days'*. The Diasend charts at DM-I39 show that AB has been tested regularly when in the father's care. There are very few hypos. The lowest hypo was 2.6 on 3rd October 2021. There are three readings of 2.9 (25th, 28th and 29th October 2021) and a similar reading on 2nd October 2021 but

the rest are all in the 3's. The readings are mostly green and the hyperglycaemic readings are mostly moderate. The school excel chart (prepared by counsel) shows highs and lows at school (on the 15th December there is the low of 1.2; the advocates agreed in submissions that this reading may have been an error of the school as the Diasend upload for the same time read 15.7. Even if it is not an error, on what I have heard and read, any low reading is probably down to the school and not down to the father or his partner.

480. In oral evidence, Professor Hindmarsh said:

i) He had seen the two Excel charts relating to AB's diabetic readings at school.

ii) He referred to the LibreView summary at J823. It shows the percentage of time that AB's reading were high between 27th August and 24th November 2021 was 55% (31% very high and 24% high). He said: '*it is back to where it was in Jan – Feb*'. By that he meant that the levels are similar to the time when the mother was coping with the management of AB's diabetes in January and February 2021. I agree with Professor Hindmarsh. I have studied the Diasend material relating to January and February 2021 at DM-I9.

iii) He said that there is a suggestion that, since AB has lived with the father, the blood glucose level has been allowed to run higher than in the past and '*whether that has been due to a conscious attempt to avoid hypo I cannot say*'. I can understand why that might be the position but, overall, the readings are relatively stable and are very different to the time when, as I have found, the mother was not coping with AB's diabetic management. That can be seen at a glance by looking at DM-I28 (15th June to 20th June).

iv) AB is older now and that is relevant overall to the blood glucose analysis. Even 6 or 9 months on, his communication skills would be better.

v) He was referred to the email, dated 10th May 2022 sent by father's partner, to Nurse S and their concerns that the school was not managing AB's blood glucose levels adequately (I have included the terms of the email at paragraph 80 above). Professor Hindmarsh had not seen the email before but said that the reason for the blood glucose levels mentioned in it might be that AB takes more exercise at school and less at home. Professor Hindmarsh could not comment further on this but said that there appeared to be a '*bit of a question mark about the support that he is having in school with his diabetes.*' I do think that there needs to be work done with the school in relation to the management of AB's diabetes. That does not detract from the fact that the father, his partner and his family have managed AB's diabetes well.

481. MGM is less enthusiastic about the management of AB's diabetes by the father. In her statement: '*I find it hard to know why AB has not been in hospital since living with The Father. I can't speak to that or explain why the Mother was asked to bring AB in and the Father isn't. I think the Mother was anxious and calling often, whereas I don't know if the Father does that to the extent that the Mother did. I have seen the data from the Accucheck Aviva meter (finger prick machine) and can see there have been regular highs (up in the 20s) and in the same day lows (down to 3.4) whilst AB has been in The Father's care. I haven't seen the other data from the Libre Review so*

don't have the full picture, though. We aren't invited to any hospital or health appointments for AB so we don't exactly how he is doing. The Father's partner, recently told me about a particularly difficult night on the 25th June 2022 (the morning of the 26th), where AB was hypo for a long time during the night. He had his blood sugar levels tested by the finger prick (Accucheck Aviva meter) at 00:52 (4.2), 03:35 (3.6), 3.55 (3.6), 4:00 (3.4), 4:14 (3.9). I exhibit a photograph of the Accucheck Aviva meter readings from that night [EXH.KR-1]. I took this photo during a contact with AB as the meter is always handed over along with his other diabetes equipment. I always ask his Partner and yhe Father how he is doing at the beginning of contact and check the finger prick meter so I know roughly whether he is going through a good or bad patch. The Partner will often say "it's been a nightmare, he's been going high" or she'll tell me that "he's been having bad hypo's". The Partner did say to me about a month ago in the park that a nurse said "don't take this personally but do you think AB had been sneaking food behind your back?". I know the nurses have advised that it's normal for a child with type 1 diabetes to have three hypos a week but for AB, he can have them three times a day. I'm not in a position to say why he is still suffering from multiple hypos as I am not there to witness it.'

482. I think that evidence of MGM is tainted by the distress and resentment that the family feel that AB is not living with them and does not. I have seen the photograph that she refers to of the Accucheck monitor and I accept her account of the readings that it shows. That does not detract, either, from the clear pattern of improved diabetes management with the father. That is compatible with the good level of overall care that the Local Authority have assessed the father and the partner to give to AB.

483. That high opinion of the care that the father, the partner and his family give to AB comes from every professional quarter. I have not heard or read any professional speaking other than highly of the care that they give him.

484. AB remains under the care of the hospital. In December 2021, Dr G reviewed AB in clinic with the father [E15]. He said that AB appeared well in himself and seemed to be enjoying school. Dr G says: *'on reviewing the blood glucose data from his flash glucose monitoring device (Freestyle Libre). The percentage of hypoglycaemia (3.0-3.8 mmol/l) was only 2%. Some of these low blood glucose levels were following physical activity. At that time AB was on fixed doses of insulin (Novorapid) for his meals and Lantus in the morning. AB and his dad were then met by our dietitian and AB was commenced on carbohydrate counting. AB and his father have had training on this. He will be reviewed in clinic in three months'*.

485. In his statement for these proceedings, Dr G said: '*AB has not had any significant episodes of ongoing hypoglycaemia since being discharged from the hospital and being under the care of his father and extended family members.'*

486. There are continuing demonstrations of the dreadful strain that the above history has caused to the mother. On 14th September 2021, the mother took an overdose of seven Zopiclone and is recorded as saying that she wanted to sleep forever [E196]. She was '*stressed due to court proceedings, hearing voices for past week, telling her she is a rubbish mother, that she will go to jail and that she is better off dead.'* On 29th September 2021 the mother attended her GP who recorded that her mental health had declined over the past 3-4 weeks and that she did not want to leave the house, was

pacing and struggling to sleep, had a poor appetite and was very tearful. An urgent referral was made to the adult mental health team and the mother was started on Mirtazapine.

487. As to the school:

  i) The headteacher in evidence said: '*The school started carb counting on 13th September 2021* [it looks as though it should be 16th – C74]. *Initially. the school and home were using different apps [C81]. In November we switched to the 'carbs and cals' app.'*

  ii) The CPOMS records of the school for 19th October 2021 state at C80 that Nurse G came to the School the week before to check that everything was OK with AB's diabetic care at the school [C80]. The headteacher said in evidence that there was uncertainty around whether the teachers were using the right, safety, needles and giving him the right insulin. The nurse was asking the school to make sure that everything was entered onto the machine every time because '*it looked as though we have not given insulin. I confirmed that we have given AB insulin every day*'. The headteacher said that the school had tightened up by making sure that there was a second person there to ensure that the right information was placed on the machine.

488. That brings to an end the chronological review that I give of the evidence and my findings.

489. **Response to the Local Authority's schedule** - Having worked through the case, I will now respond specifically to the Local Authority's schedule:

490. As to the first allegation I find that, on 5th November 2020 AB was diagnosed with Type 1 diabetes. Between the 13th June 2021 and 29th July 2021 the mother seriously mismanaged his treatment and diabetic care. As a result, AB has suffered and was likely to suffer significant harm at the time that protective measures were taken by the Local Authority (7th September 2021 or, at least 24th September 2021).

491. As to the second allegation ('*AB's admission from 10 March 2021 was due to a hypoglycaemic episode that occurred because of the mother's failure to manage AB's diabetic care and treatment, deliberately or without reasonable care'*), I reject it.

492. As to the allegation numbered four (the third having been deleted) I make the finding sought. That is '*on occasions during the week commencing 26th June 2021, whilst on holiday in St Ives, AB's mother allowed him to remain disconnected from his insulin pump for periods longer than those recommended by his diabetes medical team "as he was having such a good time going in and out of the sea". AB had to be admitted to hospital immediately on return home (late on 3rd July) and, as a consequence of his mother's failure to monitor and meet his need for insulin, was hyperglycaemic'.* I do not make the additional finding suggested by the guardian that the mother concealed from the grandmother that she was giving AB Magnum ice-creams, crisps and chocolate bars, although I accept that the grandmother did not know the extent of it.

493. As to the allegation numbered five, my findings (including their extent) are incorporated in my findings on the first allegation.

494. As to the allegation numbered six (the mother should have called for medical assistance), I make the finding sought in relation to 13th June 2021. I do not make the finding sought in relation to 19th June or 19th July 2021. I make the additional finding sought in relation to 21st July.

495. I do not make the findings sought in the allegations numbered 7 and 8 concerning the 24th July 2021. I do make the findings sought in relation to 28th July. I also make the finding sought in the allegation numbered ten in relation to 28th July 2021 (the harmful consequences of administering insulin).

496. I do not make the findings sought in relation to 3rd September 2021 (allegation numbered 9).

497. As to the allegation numbered 11 (missed education), I make the finding sought but only in relation to the period from 13th June 2021 until the end of that summer term. The period before that was due to his diabetes and treatment, about which I have not made findings adverse to the mother.

498. Allegation 12 is pleaded on this basis: '*AB has suffered emotional harm by thinking of himself as an ill child.'* I do not make a finding in those terms. AB was and is an 'ill child'. He has diabetes. That is no fault of the mother.

499. Allegation 13 is pleaded in these terms: '*AB has suffered significant harm emotionally and to his social development through unnecessary and prolonged stays in hospital and due to the mother's handling of his diabetes.'* I intend to combine the two allegations and express my findings in words of my own.

500. On the issues raised in allegations 12 and 13, I find as follows: during the period from 13th June to 24th August 2021 AB suffered significant emotional harm and disruption to his social development that was attributable to the mother's care in that: a) when in her care, he experienced periods of hypoglycaemia and hyperglycaemia through her mismanagement of his diabetes, which were distressing to him and disturbed his emotional balance and b) he experienced further medical intervention and hospitalisation due to that mismanagement.

501. Based on the above, I find that the criteria in section 31(2) the Children Act 1989 are fulfilled both on the basis of harm and on the basis of likelihood of harm as at the time that protective measures were taken.

502. **Final words** – Due to the inadequacy of the time estimate, this case has caused considerable disruption to other work (at least five other cases had to be adjourned) and to my own personal life. I will never let that happen again and blame myself for it.

503. I intend, therefore, to exercise my own personal prerogative and case management powers to direct as follows:

i) This judgment has been released to counsel in draft. The conclusions that I have reached may be communicated to the parties and to their solicitors but the judgment must not be released until the steps set out in paragraph two have been completed.

ii) By 4 p.m. on Friday 5th August 2022, counsel must liaise with each other and produce one copy of this judgment with any typographical corrections and corrections of detail marked for my consideration, using track change. By that time, counsel for the Local Authority must send that copy to me directly by email.

iii) By that same time, the Local Authority must submit a draft order for me to consider. The order will need to record the findings that I have made and will also need to give directions for the welfare stage. I can anticipate that there may well be applications for a psychological assessment of the mother.

iv) If there are any applications for permission to appeal, the party making such an application must liaise, without reference to me, with the listing office for a listing to be placed in my diary for me to consider the application on paper. The time estimate for any such listing must be correct. There must be a certificate filed in relation to any such hearing in the terms set out below.

v) I will not accept any emails from any party seeking clarification of the judgment, if any such clarification is sought. If there is an application for clarification, it must be made by way of a formal application to the court office and must be listed for an attended hearing before me. The arrangements for any such hearing must be made by the party seeking that clarification liaising with the listing office of the Family Court. I must not be copied into any such communications. Any such hearing that is arranged must also bear a certificate by the intended advocate who will appear on behalf of any party seeking clarification, giving the time estimate and certifying that: i) he / she has considered the time estimate and paragraph 10 of PD27A of the 2010 rules and ii) the other parties have confirmed that time estimate and iii) the time estimate is correct. The time estimate must allow two hours for me to re-read the judgment in preparation for any such hearing.

HHJ Stephen Wildblood QC

Sent to counsel in draft: 27th July 2022. Handed down: 2nd August 2022

Legal directions

1. The burden of proof is on the Local Authority. It makes the allegations and so it must prove them. I need to make reference to specific aspects of this direction in relation to this case:

   i) At no point does the burden of proof shift on to the mother.

   ii) At no point does it become logical, legal or acceptable to approach evidence on the basis that: a) there is 'no smoke without fire' – otherwise the mere voicing of an allegation would render a person guilty or b) repetition of an allegation or mere assertion by a witness of itself creates reliability or cogency.

2. The standard of proof is the civil standard, the balance of probabilities. If the Local Authority substantiates on evidence that it is more probable than not that a disputed event occurred as alleged, then the disputed event becomes an established fact for the purposes of these proceedings. If the event in question is not so proved, it is treated as having not occurred. That is the binary system that the court operates. Findings in the family Court should be subject to a similar forensic rigour as deployed in the criminal Courts.

3. The court must reach decisions in relation to disputed allegations on evidence, not speculation. It may draw logical inferences from evidence that it has accepted but that is entirely different to speculation. In reaching any conclusions, the court must not go further than accepted evidence and permissible inference permit.

4. There is no direct evidence that the mother did administer insulin to Child AB on 24th or 28th July 2021 as alleged by the Local Authority. For instance, there is neither evidence that any witness saw or heard the mother doing so nor is there evidence that she confessed to doing so. The Local Authority therefore relies on circumstantial evidence in support of its contentions that she did so. That is, it relies on different pieces of factual, expert and biochemical evidence, none of which on their own directly proves that the mother did act in the way alleged but which, the Local Authority says, when taken together demonstrate that she did so. Circumstantial evidence, when properly analysed, may lead to clear conclusions but it is essential that each of the constituent parts of the circumstances alleged are scrutinised and evaluated before any conclusion is reached.

5. On behalf of the mother, the case advanced by the Local Authority is denied and it is contended that the expert evidence of Professor Hindmarsh and other circumstantial evidence, when properly analysed, do not substantiate or support the essential parameters of the Local Authority's case on the issues relating to the 24th and 28th July. I have to piece together all of the evidence in relation to each of the Local Authority's allegations, marrying together the factual, medical and expert evidence and decide which, if any, of the pieces of evidence I think are reliable and which, if any, are not. I must then decide what conclusions I can draw, fairly and reasonably,

from any pieces of evidence that I do accept, combining together those pieces of evidence and the mother's responses to them. In performing that exercise, I have to avoid engaging in guess-work or speculation about matters which have not been proved by any evidence. Further, I have to avoid what is sometimes called the ancient fallacy of the Sorites – allowing the elision of a number of unsubstantiated or irrelevant contentions to combine together to achieve an overall status beyond their collective evidential and probative value.

6. Hearsay evidence is admissible in family proceedings of this nature - see The Children (Admissibility of Hearsay Evidence) Order 1993. Family Proceedings fall within the definition of 'civil proceedings' for the purposes of the Civil Evidence Act 1995 (see the Red Book 2021, p1866). By section 4 of the 1995 Act, there is a checklist of factors that the court should consider when 'estimating the weight to be given to hearsay evidence'. Case law has emphasised that, where hearsay evidence is admitted and relied on, the formality of the enquiry must be maintained, and hearsay evidence must be scrutinised with considerable care.
7. The court has to reach a conclusion in relation to each of the separate allegations and, therefore, the evidence in support of and contrary to each allegation must be identified and then weighed up separately without compartmentalising it. The court must marry together all of the evidence relating to each allegation and reach a conclusion upon it in a way that is consistent with the court's overview of the evidence. Where findings are made, the court also has to decide upon the extent to which a given finding might be relevant (or add weight) to or against another allegation – that is an exercise of judgment and evaluation as to whether findings on one allegation are logically informative of another.

8. In this case, in particular, it is essential to maintain an overview of the evidence, not just to ensure consistency but also to make sure that there is both macro and micro analysis. Mixing concepts, the devil of cases such as this lies in the detail, making it necessary to put all of the jigsaw pieces together, painstakingly, before forming an overall view. However, it is also necessary to see the wood, as well as the trees. In order to do that, I have placed the evidence that I have heard into a lengthy chronology so that I can build up a picture of what has occurred.

9. In this case I have heard the oral evidence of one expert, Professor Hindmarsh. His evidence is of the highest quality. However, the roles of the judge and of the expert are different. The responsibility for making decisions in a case rests with the judge not the expert. Further, the expert evidence must be considered as part of the evidence in the case and must be analysed in association with the rest of it. The report and addendum of Dr Pipon-Young, the psychologist, was not disputed and so I have no oral evidence from her.

10. When considering the evidence of Professor Hindmarsh and the opinions advanced by other medical witnesses on matters of medical science, it is necessary to recollect that:

i) The answer to the issues in this case cannot be provided by medical science alone. The medical evidence must be combined with the factual evidence before a satisfactory conclusion can be reached.

ii) Medical science and medical practice are, and always have been, developing phenomena and, therefore, their limitations must be properly defined. That which is advanced a matter of accepted medical practice or thesis may be shown, in subsequent years, to be unfounded.

iii) A conclusion of unknown aetiology in respect of an infant represents neither professional nor forensic failure.

iv) Recurrence is not in itself probative.

v) If the court disagrees with an expert's conclusions or recommendations an explanation is required.

11. The evidence of the mother in this case is of obvious importance. The court has to make a clear assessment of her credibility and of the accounts that she gives. In this case I have an abundance of evidence about her, which requires careful analysis. I also remind myself that, contrary to the belief of some, the witness box provides a very poor sole environment in which to make an assessment of a person- a point that relates to all witnesses, not just the mother. It is all too easy for lawyers and judges, who appear in court regularly, to forget how nerve-racking, disempowering and bewildering it can be for people to give evidence. The witness box has been a particularly stressful environment for this mother.

12. Despite regular breaks and other special measures, the mother was unable to complete her cross examination as a result of her obvious and understandable distress. Some of the oral questioning had to be curtailed for the same reason. None of that is the mother's fault and I do bear in mind that, if she had not been so distressed, there would have been more that she would have wished to say. Some written questions were put to her, by agreement, after she had left court on 20th July 2022 and I take her answers as being part of her evidence.

13. It is important to bear in mind that the mother is of good character, having no criminal convictions recorded against her. A fact finding hearing focuses on the negative and it is important, also, to take fully into account the positive and to limit comment to its essentials. I heard a considerable body of evidence from many different sources about the attachment that exists between this mother and Child AB and the many other positive aspects of her parenting and personality.

14. In this case, inevitably (since there are disputed issues of fact), there are allegations that the mother has not told the truth. Where it is alleged that an accused person has lied, the court must take a disciplined approach to that allegation, recollecting the jurisprudence from *R v Lucas* [1981] QB 720. First, having identified the alleged lie

in issue, it must ask itself whether the Local Authority has proved to the requisite civil standard that the alleged lie has been told; at that first stage of the analysis it is important to differentiate between i) a lie and ii) story creep, mistake, confusion, memory failure, distortion arising from disability or immaturity, etc. Second, it must analyse why any proven lie has been told, recollecting that people may lie for many different reasons - such as embarrassment, a sense of shame for having caused injury accidentally, a desire to hide some other wrong-doing, a wish not to 'wash their dirty linen in public', fear that the truth might be misinterpreted or might be otherwise damaging, resentment about the enquiry, a mistaken belief that lying might improve the witness's position in the case, etc. Third, if the lie is proven, the relevance of the lie to the enquiry must be considered – some lies, although reprehensible, will have nothing to do with the outcome of the case beyond assisting with the analysis of the person's general credibility. Fourth, it has to be remembered that, just because a person lies about one issue, it does not mean that he/she can be taken to have lied about everything.

15. I have reminded myself about the need for a Judge to be alert to dangers of 'hindsight and outcome bias'. The Department of Education's Guidance on 'Improving the Quality of Serious Case Reviews' published in June 2013 includes: '*Hindsight bias occurs when actions that should have been taken in the time leading up to an incident seem obvious because all the facts become clear after the event…Outcome bias occurs when the outcome of the incident influences the way it is analysed.'*

16. I think that there are two more important forms of bias that have to be avoided and which are particularly relevant in a case such as this. They are:

    i) Confirmatory bias (of which Francis Bacon spoke as long ago as 1602). That arises where, particularly in a complex case like this, someone takes a view at an early and under-informed stage and then drags the developing information into confirming that initial view, blind to the need to maintain an open mind until all the information (i.e. evidence and argument) is completed.

    ii) Blame bias. That arises in a case where adverse consequences arise, and the decision maker feels a need to ensure that someone is found to blame.