Case No: HQ14C05374

Neutral Citation Number: [2018] EWHC 2570 (QB)
IN THE HIGH COURT OF JUSTICE
QUEEN'S BENCH DIVISION

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 05/10/2018

Before:

HER HONOUR JUDGE TAYLOR
(Sitting as a Judge of the High Court)

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Between:

LLOYD ASANTE	**Claimant**
- and -	
GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	**Defendant**

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- -

Ben Collins QC (instructed by **McMillan Williams**) for the **Claimant**
Bradley Martin QC (instructed by **Bevan Brittan**) for the **Defendant**

Hearing dates: 7th, 8th, 9th, 12th and 15th March 2018

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Judgment

Her Honour Judge Deborah Taylor QC:

1. The Claimant, Lloyd Asante, claims damages for negligence in the treatment he received for a serious bone infection at St Thomas' Hospital, London, in 1999 – 2000. Breach of duty and causation only are to be determined at this stage.

Background

2. The Claimant suffers from sickle cell disease (SCD). SCD is a hereditary blood disorder with well-known consequences including restricted blood flow within bone, and complications including the development of osteomyelitis. In June 1999 the Claimant attended the hospital for the first time with a sickle cell crisis. He was 17 and had recently arrived from Ghana. He was very small and underweight for his age, had a history of malnutrition, and a bone age estimated at 11 years. Between June and August of 1999, under the care of Dr Okpala, a haematologist, he was admitted on several occasions for treatment for acute sickle cell crises, with symptoms of severe pain in different parts of his body, raised temperature and abnormal blood tests.

3. On 10 August 1999 the Claimant was admitted with a further sickle cell crisis and subsequently a diagnosis of acute osteomyelitis in his right tibia was made. It is his treatment in the period after this admission which forms the basis of the claim. It is common ground that the key periods of his treatment were during August/September 1999 and in March/April 2000, although there are some significant aspects of treatment in the intervening months, particularly November 1999, which need to be considered in the overall chronology.

Relevant Medical Chronology

4. There is an incomplete set of inpatient medical notes, and contemporaneous CT scans and laboratory reports are not available. There are some nursing notes, but these too are limited. In addition, no evidence has been given on the Defendant's behalf by the treating physicians or nurses who were responsible for the Claimant's care in the relevant period. The Defendant's position is that attempts were made to locate some of those concerned, which were not successful given the passage of time. Civil Evidence Act notices in respect of the evidence of Mr Smith, Mr Davies and Mr Brown were served in 2016 some time before the trial, stating only that they had left the employment of the Defendant and efforts to date to trace them had been unsuccessful. There has been little information as to steps taken before or since then. I will return to this in due course, but the result is that the history is taken primarily from the notes which are available; the interpretation of some key documents being in dispute. Whilst Mr Asante and his mother have provided statements which have been admitted in evidence without challenge, they are understandably of limited evidential value in relation to the medical and technical aspects of the treatment given to the Claimant, but are of some assistance as to the history.

5. It is therefore necessary to set out in some detail the records which underpin the evidence given by the experts in this case.

August/September 1999

6. On 10 August 1999 the Claimant was admitted. The following day, 11 August, a swelling was noted over his right upper tibia. There was no history of trauma, and a diagnosis of osteomyelitis was raised. Dr Okpala liaised with the orthopaedic department of the hospital for an x-ray of the tibia. It was thought that the swelling was a collection which had to be drained. Antibiotics were given.

7. On 12 August 1999 Mr Mannion, Orthopaedic Registrar, reviewed the Claimant. The sickle cell crisis was over but there was still swelling over the shin. A diagram in the notes shows a 5cm diameter swelling. Diagnosis of an abscess and/or underlying osteomyelitis was made. Aspiration of the swelling showed thick pus-like fluid. The note records "*abscess needs drainage plus/minus drilling of underlying bone as almost certainly communicating*". On the same day, a microbiology entry noted probable staph aureus in the pus from the swelling and advised continuing flucloxacillin. It appears that incision and drainage of the swelling was originally planned for later the same day, as there is a note "*Informed by nursing staff Mr Asante has been cancelled for incision and drainage tonight. For elective list tomorrow. Family not informed. IV antibiotics continued*".

8. The incision and drainage took place on 13 August 1999, carried out by Mr Smith, Consultant Orthopaedic Surgeon, and Mr Mannion. The operation note records "*Pus +++ Lifting off of periosteum. Drill holes x 4 into tibia: obvious pus from bone…*". Post-operative instructions were given for the wound. Periosteum and pus samples were taken for microbiology. Although written later, a letter from Mr Davies dated 27 January 2000 gives further information about the operation itself:

> "After exchange transfusion he was taken straight to theatre where a large amount of pus was evacuated and the proximal tibia was drilled and was evacuated under pressure…"

9. Post-surgery there are notes which document the Claimant's progress, and relevant to the issues in this case, refer to the possibility of his undergoing debridement. On the 14 August ward round, it was noted "*Mr Davies suggests theatre on Monday trauma list – afternoon – for further debridement*"; the Claimant was "*NBM [nil by mouth] Mon. morning RV [review] Monday? trauma list pm.*". The nursing notes for 14 August record the wound to be 2cm deep, 3cm long and 3cm wide. The following day, 15 August, it was noted that the '*wound looks clean*' and the Claimant was for "*?trauma list tomorrow pm for further debridement to be decided tomorrow morning*".

10. The next note on 16 August from the ward round is important. It stated: "*No theatre. Partial weight bearing. WOUND INSPECTION – purulent wound but progress made. Awaiting cultures*." There is no further explanation given as to "no theatre", the degree of purulence or the progress said to have been made. The same day microbiology confirmed the diagnosis of staph aureus osteomyelitis and advised continuing with flucloxacillin.

11. On 17 August a diagram of the wound was recorded, referred to as a tracing with measurements. Using the scale provided it appears that the total wound size was about 3cm at widest, 9cm at longest, with an exposed bone area of about 1.5cm by 7cm. On 19 August Mr Davies noted: "*wound discharging. Bone exposed. Large open wound*

exposing cortical bone. No periosteum". The following day, 20 August, the tissue viability nurse noted "*approx. 5cm of exposed bone*".

12. Through the available notes measurements of the wound have varied. On 22 August Mr Mannion noted that the wound was 4 x 1.5cm. (Initially Professor Atkins, the orthopaedic expert for the Defendant read this entry as 15cm, but it is now accepted by all that this was an error based upon a poor copy). On the same day Mr Mannion noted about the wound: "*granulating edges but not extremely clean. Bone exposed with drill holes from operation. Not discharging. Not ready for closure /graft. Possibly theatre Friday – rotation graft.*"

13. Also on 22 August (but agreed to be misdated 22 September 1999) a nursing note records "*wound unchanged since 17.08.99 in dimensions but looks more swollen*". On the same page as the diagram of 17 August, a further diagram of the wound has been dated 22 August. Whilst it has no measurements it is similar in format to the previous diagram and has, on the copy available, vestiges of what appears to be the edge of paper, in the same way. It is labelled to indicate that the outer part of the wound has "*pink wound sides*" and the inner part is "*yellow bone*". The drill holes are marked on the diagram.

14. On 23 August, VAC dressings were commenced to promote healing. An x-ray was taken on the same day. It is not available, but on 26 August Mr Davies and Mr Mannion recorded "*x-ray seen – no osteomyelitis*". The wound was described as "*clean dry non-infected. Davies – looks OK, wait to see how it heals*". There is no record of the state of the bone. On 1 September a tissue viability nurse noted "*wound clean + signs of granulation – if slow. For theatre Friday for direct closure. Continue with VAC until then*".

15. On 3 September Mr Davies attempted to close the wound. The operation note records: "*procedure: sterile draping. Cleaning. Debridement of edges. Wound swab from bone. And adaptation of the skin with 3-0 nylon*". It was noted that when the wound healed, the Claimant could go home. However, at a ward round 3 days later, on 6 September, it was noted that one third of the wound was "still gaping" "*otherwise healing well. Producing a bit of wound sluff*".

16. On 8 September Mr Davies' ward round notes show that the proximal wound was opening up. The following day 9 September a tissue viability nurse noted dehiscence of the wound, and a VAC pump was applied. On 15 September, the Claimant was discharged with the bone exposed, for the wound to heal by secondary intention (in lay terms, naturally).

17. Over this period, the Claimant was prescribed antibiotics. Following the drainage procedure, intravenous antibiotics were given for under a week. A microbiology note on 18 August stated that there was no reason why he could not switch to oral flucloxacillin. Thereafter he was given oral antibiotics for a further four weeks, with the last two weeks until 18 September 1999 on a reduced dose.

<u>Following Discharge in September 1999 to March 2000</u>

18. Over the following weeks the Claimant was seen in outpatient care. Notes on 23 September, 21 October and 25 November note improvement in the wound. On 19

November 1999 he was seen by a consultant haematologist who noted a 2-3cm diameter open ulcer on his tibia. On 25 November, although the wound was noted to be getting smaller, a swab was taken and cultured staph aureus. Flucloxacillin was given. On 16 December the wound was noted to be 2cm by 6cm and being regularly dressed by district nurses.

19. On 24 December 1999, Dr Okpala reviewed the Claimant in the haematology clinic and noted that the surgical incision had not healed despite daily dressings. The wound was "*still discharging purulent material*". Dr Okpala diagnosed chronic osteomyelitis of the tibia and provided a prescription for flucloxacillin, ciprofloxacin and penicillin for 2 weeks. He requested an x-ray and noted that if there was a sequestrum or dead bone detected, surgical removal should be considered.

20. In January 2000 the Claimant was seen in Mr Davies' clinic, and on 27 January 2000 Mr Davies wrote a referral letter (part of which is set out above) to Mr Smith, a consultant orthopaedic surgeon also at the hospital. The correspondence is relied upon by both parties, and therefore I set it out at some length.

21. In the letter of 27 January, Mr Davies wrote:

> "…It has taken several months for the exposed bone to become covered in soft tissue and skin. He continues to discharge from the wound and although I doubt whether there is anything to be done I would value your expertise in his future management. If you feel there is nothing more to be done and you would like me to continue managing him I will do this…"

In a separate letter to the Claimant's GP the senior registrar in haematology wrote on 3 January that:

> "His right leg ulcer appears to be healing very slowly… X-ray of the right tibia done a month ago was said to have shown multiple lucencies, suggestive of chronic osteomyelitis…"

On 2 February Mr Smith also wrote to the GP saying, "I am not sure if surgery will help here but let's find out if there is something we can correct…".

<u>March 2000</u>

22. On 6 March Mr Smith wrote again to Dr Gupta. He said "*...You will remember he had an osteomyelitis of his right proximal tibia which has gone on to an element of chronicity. CT scan confirms a cavity and possible sequestrum. He will come in for guttering of this which hopefully will cure the problem…*".

23. The meaning of the letter of 6 March 2000 is disputed, and its interpretation is significant in relation to the views expressed by the experts. For the Claimant, Mr McFadyen takes the reference to "*the problem*" as being to osteomyelitis, indicating that the aim of the guttering procedure was to eradicate osteomyelitis. Professor Atkins for the Defendant takes the same word as referring to the sequestrum only.

24. On 17 March the guttering procedure was carried out. A diagram in the notes shows excision of a sequestrum – dead bone - with a margin of normal bone. The bone cavity was curetted and the wound dressed and bandaged. The operation note did not include any antibiotic plan, or any plan for ongoing management.

25. On 20 March the registrar noted there should be consultation with Mr Smith about staph aureus, but not to treat at present. The ward round note the following day records that the wound was discharging yellow pus. Staph aureus was grown from the bone biopsy. On 23 March the Claimant was prescribed antibiotics and discharged to outpatient care. On seeing him on 27 March in outpatients Mr Smith noted that he had been left with "a bit of a hole". The plan again was for the wound to heal by secondary intention, but if problems were experienced then a muscle flap or skin graft could be considered.

26. On 7 April the Claimant was admitted again with increasing pain. It was noted that his leg wound was tightly packed and had pus in the bone and there was little granulation tissue. The wound measured 1.5cm deep, 8cm long and 2cm wide.

27. On 10 April, the registrar noted the wound still oozing and questioned whether a muscle flap was indicated. On 13 April the wound was recorded as 3cm deep 10cm long and 2cm wide. The same day the question of a muscle flap was further considered and on 14 April 2000 the nursing notes record:

> "Spoke to Mr Smith, wants to perform gastrocnemius flap at some stage next week if swab results negative. I informed Lloyd and his mum about this"

28. However, three days later on 17 April, the nursing note records that Mr Smith was happy for discharge with assistance from the daily district nurse for dressings, and the Claimant was discharged the following day. There is no record of whether the swab tests were negative or not.

29. The Claimant continued to be seen in outpatients and suffered further episodes of infection in June and July. In August 2000 the possibility of a gastrocnemius flap was raised again, with excision of a bone segment and bone transport, but left for Mr Smith's return from holiday. There is no note of the treatment being considered further. It is accepted that the Claimant now suffers from chronic osteomyelitis, scarring and hypersensitivity of the skin.

<u>The Issues</u>

30. Although there are voluminous pleadings in this case, the area of dispute was narrowed considerably by the experts' meetings and has become clearer still during the course of the trial. Whilst there is some marginal disagreement in the formulation of the issues, on breach of duty the issues are:

    a) In relation to treatment in August/September 1999, whether it was negligent not to undertake further surgical debridement and/or carry out a local gastrocnemius muscle flap procedure to cover the exposed bone. (Whilst the appropriateness of the antibiotic regime is an issue, it is now relied upon by the Claimant as an evidential factor, rather than a separate basis for breach of duty); and

b) In relation to treatment in March/April 2000, whether it was negligent following the guttering procedure not to provide soft tissue cover by a gastrocnemius flap and /or adequate antibiotics.

31. In relation to causation, if breach of duty is established, whether, had further debridement, a gastrocnemius flap and appropriate antibiotic treatment been carried out, it would have prevented chronic osteomyelitis or substantially cured it.

Expert Medical Evidence

32. Expert medical evidence was given by consultant orthopaedic surgeons: Mr McFadyen for the Claimant and Professor Atkins for the Defendant. Evidence was also given by haematology experts Dr Ryan for the Claimant (and whilst Dr Tillyer's evidence was provided in writing and there was an Agreed Statement, she did not give evidence), and the microbiology experts Dr Shetty for the Claimant and Professor Wilson for the Defendant gave evidence. Plastic surgery experts Professor Nanchahal and Mr Varma also gave evidence on causation.

Breach of Duty

33. I start with the orthopaedic evidence, as it is accepted that in relation to breach of duty the primary issues in this case are orthopaedic, having regard to the discipline of the treating medical team. It is agreed that there was a multi- disciplinary approach to treatment, albeit not as formalised as would now be the practice, and I will refer to the experts' evidence in other disciplines as it supports or does not support the orthopaedic case advanced by both parties.

Orthopaedic Experts

34. I make some preliminary observations about the expertise of Mr McFadyen and the approach of Professor Atkins. Criticism is made of Mr McFadyen's ability to give evidence upon which the court can properly rely as to what was reasonable practice in a hospital in the UK in 1999. In 1999/2000 he was not a consultant but an orthopaedic registrar in Cape Town and his UK orthopaedic experience was limited to two six-month stints as a junior orthopaedic doctor in Gloucester and Bath in 1997 and 1998. He became a registrar working under Professor Atkins at the end of 2000, but did not complete his specialist training until 2006, and attained his first consultant post in 2007. The Defendant submits that even if Mr McFadyen has now spent some considerable time as a consultant in the UK, and has achieved eminence in his field, he is not competent to give reliable evidence about reasonable practice at the time. In contrast, the Defendant holds out Professor Atkins as an eminent consultant now and at the time of these events, with contemporaneous experience in the UK.

35. Mr Collins for the Claimant submits that although Mr McFadyen was not a consultant at the time, he was aware of the practices in UK hospitals, including Professor Atkins' own hospital at or very close to the relevant time. Mr McFadyen said he was very careful to try and recall and establish the standard of care in 1999 and reflect that in his report and evidence. He accepted the difficulty of doing so due to the passage of time. Some aspects of practice stuck in his memory from his own experience, for others he had referred to texts. His evidence was, however, that the principles of treatment of osteomyelitis, surgical debridement, soft tissue coverage and antibiotic administration,

have not changed since 1999 and indeed since before then. Professor Atkins also acknowledged that many of the principles remain the same, and in his report the difficulty of remembering what was standard practice in 1999. As it has transpired, he has made errors in recollection about the availability of free flap and muscle flap procedures at that time.

36. Having considered the points raised by the Defendant, I am unpersuaded by the argument that Mr McFadyen cannot give expert evidence upon which I can rely about standards of practice in the UK in 1999. As Mr Collins QC pointed out, there are many instances of experts giving evidence about matters which pre-date their own expertise. Mr McFadyen's experience began in the mid-1990s, and he has been a consultant since 2007. He acknowledged that in 1999/2000 his own decisions would have been subject to the final judgment of a consultant, but that in itself does not disqualify him from giving evidence as to what those judgments would have been, and whether a reasonable body of opinion at the time would support them, by reference to his own experience and contemporaneous texts.

37. The Claimant also contends that Professor Atkins' approach has not been thorough and even-handed, and that in coming to his conclusions, he has been selective and, in some instances, demonstrably wrong in his reliance on and interpretation of the notes, and that his evidence is therefore unreliable. That is disputed by the Defendant, and I will consider the criticisms in the context of the evidence.

Orthopaedic Reports

38. Mr McFadyen (along with all of the Claimant's experts) produced two reports: one in mid-2016 before disclosure of a tranche of missing notes, and the second in October 2017 after the disclosure. For the purposes of the trial the later report has been relied upon, but Mr McFadyen confirmed the opinions expressed in the first report, apart from where his views had been altered by new material. Professor Atkins produced a report in April 2016 and a letter dated 15 January 2018, primarily revisiting his opinions following the identification of the error in relation to the wound size (15cm rather than 1.5cm) to which I have already referred. Subsequently, much was agreed between Mr McFadyen and Professor Atkins in their joint statement of 18 January 2018.

39. Mr McFadyen's evidence in his reports in relation to the treatment in August/September 1999 was that although he had no criticism of the incision and draining procedure, it is often the case that severe infection requires more than one attempt to evacuate all pus and infected material. In Mr Asante's case 72 hours later there was purulent discharge, and further surgical debridement was required to remove remaining infected and dead material. Failure to return him to theatre for debridement was a breach of the standard of care which would have been expected of a reasonably competent orthopaedic team in 1999.

40. Further, when, as in this case, the cortical bone had been involved in osteomyelitis and stripped of periosteum, leaving it uncovered by viable tissue, open to the air or covered only by dressings would be doomed to failure. It would have been deprived of an effective blood supply, and the necrotic bone would be a potent source of ongoing infection. Failure to cover the bone with a tissue flap was a breach of the standard of care required of a reasonable competent orthopaedic team. The attempt to close the wound on 3 September 1999, after the wound had been left open and the bone exposed

since 13 August, was not a reasonable surgical plan to achieve tissue cover, and all reasonably competent orthopaedic surgeons would have realised that a local flap would be required. After the closure failed, with wound dehiscence within days, it should have been acknowledged that the plan had failed, and a new approach to achieve soft tissue cover should have been attempted, either with the assistance of the plastic surgical team, or if the orthopaedic surgeons had experience of flap surgery, by the orthopaedic team.

41. In relation to the treatment in March/April, Mr McFadyen concludes that the preoperative investigation and planning of the guttering surgery represented a reasonable standard of care. However, there was a failure to provide reasonably competent care following the operation: no flap was provided for the wound, and no antibiotics were started for a period of days.

42. Professor Atkins' report of April 2016 concluded that the treatment provided in August/September was reasonable and in accordance with standard practice at the time. His report was, however, predicated on the erroneous basis that the wound was a very large one, measuring 15cm x 4cm. This was the only measurement referred to in the report, and it is apparent from the conclusions on both breach of duty and causation that he considered it was an important factor. At paragraphs 5.29 to 5.33 he said in relation to breach of duty that "*the soft tissue defect in this case is very large… The region of the proximal tibia and the extent of the soft tissue defect render it highly unlikely that a local muscle flap such as a hemi- gastrocnemius flap would be able to cover the soft tissue defect*". Then, in relation to causation, "*In my opinion, given the size of the soft tissue defect, chronic osteomyelitis was inevitable*".

43. It was also clear from the report that Professor Atkins believed that in 1999 free flap surgery was not in existence, and that gastrocnemius flap surgery was far from routine. He concluded in the absence of alternative methods of soft tissue coverage, the attempt to close the wound was reasonable, although with hindsight, doomed to failure.

44. Once the error as to the measurement was apparent, Professor Atkins revisited the issues and further allegations on the Pleadings in his letter of 15 January 2018. The new information did not alter his opinion that there had been no breach of duty in the treatment of the Claimant. As far as the measurements are concerned, he relied upon the wound, shown as measuring 9cm x 3cm on the diagram of 17 August, having reduced to 4 x 1.5cm on 20 August 1999, and therefore concluded "*the implication is that this wound is very rapidly reducing in size with the treatment being provided. This is the expected evolution of a case of osteomyelitis under these circumstances. It is usual for the acute wound of an explored osteomyelitis in circumstances such as represented by the Claimant to resolve spontaneously with standard serial dressings and therefore in this case it was reasonable and appropriate for the clinicians to continue conservative and expectant treatment of the wound...*".

45. His view was that a muscle flap cannot eradicate chronic bone infection, and if infection has not been eradicated, may lead to an abscess forming below the sealed muscle flap with acute pain and potential sepsis. Further, there was no indication for further debridement after the August procedure, as there was no evidence that material or important necrosis was left behind. A bony scab would form over the bone and protect the healthy bone below, and removal of it would be pointless as a new scab would form. Bone debridement risked the integrity of the bone, and possible fracture leading

potentially to amputation. Professor Atkins also expressed the opinion that, with sickle cell crises, small areas of bone within the centre of the bone lose their blood supply because the channels are blocked by the sickling cells. These small bone infarcts remain and where the operative infection is staph aureus, make osteomyelitis impossible to eradicate. Professor Atkins referred to the aphorism "once an osteomyelitis, always an osteomyelitis", which he repeated subsequently in evidence several times.

46. Mr McFadyen and Professor Atkins met and prepared a joint statement on 27 January 2018. They agreed on many issues including that muscle flap surgery and free flap surgery were available at the Defendant hospital in 1999, but that if surgery was indicated it would have been by gastrocnemius, not free flap. They agreed that the risks posed by Mr. Asante's SCD were appreciated by the clinicians at the time. The period and method of antibiotics was reasonable after the procedure in August 1999 and a higher dose for a full period of 6 weeks would not have altered the outcome.

47. The key differences between them remained. Mr McFadyen's opinion was that in August 1999 the wound was not healing and the clinicians should have considered that the drainage process was inadequate and should have undertaken further surgery. Leaving infected material increased the risk of development of chronic osteomyelitis. In addition, allowing the wound to heal whilst bone was exposed for a period of 3 weeks was excessive. Therefore, after surgery, as soon as the wound ceased to have a purulent discharge a gastrocnemius flap ought to have been undertaken. Had these two measures been carried out, on a balance of probabilities, the development of chronic osteomyelitis would have been avoided. Failure to carry out these measures was a breach of duty causing chronic osteomyelitis to develop.

48. With regard to the guttering procedure carried out in March 2000, Mr McFadyen's opinion was that this should have been carried out much earlier after 27 November 1999, when staph aureus was identified on the swab. The delay was too long. The letter of 6 March 2000 showed the aim of the surgery was to cure osteomyelitis. In the circumstances the failure to have any antibiotic cover or a plan to cover the defect was unexplained. They were considered but no reason was apparent for the change of plan. Had these measures been carried out, although the chance of success was lower than in August 1999, on a balance of probabilities the osteomyelitis would have been eradicated in March and April 2000.

49. Professor Atkins' opinion in the joint statement was that the notes in August and September 1999 indicated the standard resolution of an osteomyelitis wound, and therefore it was appropriate to adopt an expectant policy. There was no indication to undertake further surgery or that the drainage had been inadequate. He agreed that what was proposed by Mr McFadyen was within the range of reasonable and possible clinical decisions that could have been taken, but on the evidence of the notes, the clinicians adequately assessed their options and the treatment they undertook was also within the range of that which was acceptable, despite the subsequent development of chronic osteomyelitis. They provided the standard treatment at the time for acute osteomyelitis, and despite the Claimant's SCD, there was no reason to depart from it. The risks posed by bony surgery were not justified. Because of small bone infarcts caused cumulatively by previous sickle cell crises, the only surgical means of possible eradication would be a segmental bone excision and transport, which carried a significant risk of failure. As far as the closure of the wound was concerned, Professor Atkins expressed the view

that as there had, on the notes, been no skin excision, direct closure was an acceptable method in the circumstances.

50. Professor Atkins' view of the March procedure was that the aim of the clinicians at that time was to remove the sequestrum only, and the Claimant received the standard treatment within the context of chronic osteomyelitis. The treatment in March/April 2000 was appropriate.

The Orthopaedic Experts' Oral Evidence

51. In cross-examination, Mr McFadyen agreed that within the first 72 hours the clinicians were considering further debridement. There was no indication in the notes why they changed their mind when there was purulence, a clear indication for further material to be removed from the surgical site. If, although not set out in the notes, the clinicians had seen a dramatic decrease in the purulent discharge such that they thought it was going to dry up on its own in the next 24 hours, then that would be a reasonable decision. He said, "*I'm not confident enough about that to say, "No reasonable orthopaedic surgeon would have made that decision at that time", because I concede there is a possibility that what they are meaning by, "Progress made", is that the purulent discharge was decreasing so much that it might be going away. I recognise that that scenario might exist… I'm prepared to concede that if they mean the progress made is a great reduction in it, then they were reasonable to not take him back to theatre.*"

52. On the other hand, "*in the presence of ongoing significant purulent discharge, a reasonable volume, then no orthopaedic surgeon would leave it. They would stick with their original decision to do a repeat debridement, because they have got a clear indication that they were right with their original decision...*".

53. Mr McFadyen maintained the view that the strategy of waiting for the wound to heal sufficiently for closure left cortical bone stripped of periosteum exposed and dying for a long period of time. Earlier debridement and a quicker resolution of the wound would have enabled wound closure or wound cover, important for cure. There were changes in treating strategies without explanation which left the cortical bone still exposed. Progress in the wound meant a flap procedure was a better prospect than if there was still pus and purulent material, but wound progress was in itself not progress in terms of protecting the bone. By 22 August the wound was not purulent or discharging, but its size at any stage is difficult to assess because of the inaccuracy of the notes. The wound edges may have been getting smaller, but at the centre there was exposed cortical bone which was dying during this time, increasing the risk of chronic osteomyelitis. The longer the outer surface remained exposed to the air, the more it desiccated and bone necrosis became more likely.

54. Mr McFadyen did not accept that there were different schools of thought on treatment. He rejected the view expressed by Professor Atkins that small areas of infarct which were prone to infection by staph aureus were present as a result of sickle cell crises, which made it unlikely that infection could be resolved. The practice he saw in Britain at that time was that surgeons tried to achieve adequate debridement so that they could proceed to the wound closure or the wound cover that was needed to achieve a healed soft tissue envelope compatible with eradicating the problem. Surgeons did not shy away from carrying out surgery even though there were risks involved. Surgeons would take the lead from microbiologists regarding the selection of antibiotics, the route of

administration of antibiotics, and the duration of therapy. After discussion, orthopaedic surgeons would usually defer to microbiologists about the choice of antibiotics.

55. In cross-examination, Professor Atkins' evidence was that as long as the situation was improving, then it was reasonable to watch and wait to enable the wound to close. Even if the improvement was gradual not rapid, as he had said in his report, the clinicians were reasonable to continue a conservative expectant policy. He accepted in principle that it was known at the time that if coverage of the bone with tissue could be achieved that would aid recovery because it improves vascularity, achieves more effective delivery of antibiotics, and prevents desiccation. The three options available at the time for tissue coverage were, firstly, for the wound to close of its own accord, secondly, delayed direct surgical closure and, finally, gastrocnemius flap.

56. He did not accept that the lack of periosteum and exposure of the bone was critical in a young patient. His view was that the dressings were keeping the bone moist, and that if the periosteum was lifted off, the outer bit of bone would be damaged but the cortex would acquire a blood supply very quickly from the medullary canal of bone. He opined that there is a great propensity for revascularisation to occur, which is what surgeons would be waiting for to happen in allowing time for the wound to settle and granulate over, once the bone has reacquired a blood supply. There would then be little or no dead bone left. The wound would be closed in the hope that the residual problem would be dealt with naturally.

57. The critical factor, from his point of view, was that in a sickle cell patient the area of infarcted bone from previous cumulative sickle crises becomes infected, and infection is then not susceptible to eradication. Chronic osteomyelitis is inevitable, unless the entire area of infection is resected. That would involve a bone transport, which is something which, to Professor Atkins' knowledge, had never been done in a sickle cell disease patient.

58. Professor Atkins was insistent that there was a balance to be made. Whilst making decisions in prospect, and trying to effect cure, it must be borne in mind that the more radical a procedure, with more potential downsides, the better chance you must have of cure in order to justify doing it. A sickle cell patient is not the same as a patient who is not a sickle cell, in whom there is likely to be an isolated area of osteomyelitis where a bone resection and transport virtually guarantees cure of osteomyelitis. In a SCD patient, the risks so substantially outweigh that benefit, there is a likelihood of the osteomyelitis becoming chronic, and therefore an invasive approach is not justifiable.

59. I have set out the position taken by Professor Atkins', but it is important to look at the underlying facts when evaluating his evidence. Justified criticism was made of his selective use of the notes. He described them as "telegraphic", but there is a difference between interpreting the notes and drawing inferences, and ignoring some entries altogether. Mr Collins QC identified in particular Professor Atkins' selection of two wound measurements only to support his conclusion that the wound was "rapidly reducing in size". In cross-examination, Professor Atkins said that he took other notes (set out above) about the size and appearance of the wound into account, although they were not mentioned in his reports. His explanation for not overtly considering these notes was unsatisfactory. In particular, he suggested that the record on 14 August 1999 might read 8cm rather than 3cm, when it plainly does not. Mr. Martin argues that even if it does not say 8cm, it is clearly wrong, but that does not answer the point. Professor

Atkins dismissed the 22 August 1999 tracing as perhaps not a tracing at all, or one which could not be relied upon because it did not have measurements on it, despite it being in the same form as the 17 August 1999 tracing, which did.

60. Mr Collins also criticised his evidence in re-examination that there was a change in philosophy between 1999 and today when he said that in 1999 clinicians were more "*terrified", of making a patient worse by aggressive management of osteomyelitis, and I have mentioned amputation, and this is a very, very real possibility. If you get it wrong and you get a fracture, in 1999 we couldn't cure it*". Professor Atkins had previously set out the balance required, but had agreed that the approach advocated by Mr McFadyen, which he characterised as more aggressive, was within the range of reasonable approaches at the time, and indeed that flap surgery was routine.

61. Professor Atkins had also claimed that free flap surgery was "*simply not in existence in the year 1999*". In this respect Mr Varma disagreed with him and, for the Claimant, Professor Nanchahal provided literature demonstrating the contrary. Professor Atkins was also contradicted by Professor Nanchahal as well as Mr Varma on his evidence that gauze dressing would be sufficient to prevent desiccation of the exposed bone. Like Mr McFadyen, they agreed that because of the need for tissue cover, if skin closure could not be achieved, a flap was necessary. Mr Varma maintained his view, however, that skin closure was appropriate.

Breach of Duty – the Law

62. The test in *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582 as modified in *Bolitho v City and Hackney HA* [1988] AC 232 is whether what the doctors did (or failed to do) was in accordance with a practice accepted as proper by a responsible body of the relevant clinical opinion which is capable of being logically supported. As Lord Browne-Wilkinson said in *Bolitho*:

> "…It will seldom be right for a judge to reach the conclusion that views genuinely held by a competent medical expert are unreasonable. The assessment of medical risks and benefits is a matter of clinical judgment which a judge would not normally be able to make without expert evidence."

He referred to the judgment of Lord Scarman in *Maynard v West Midlands Regional Health Authority* [1984] 1 WLR 634, at 639 where he said:

> "… a judge's 'preference' for one body of distinguished professional opinion to another also professionally distinguished is not sufficient to establish negligence in a practitioner whose actions have received the seal of approval of those whose opinions, truthfully expressed, honestly held, were not preferred."

63. In view of what he submits are deficiencies in the notes, both as to those missing, and the lack of explanation in those existing, combined with inadequate explanation for a lack of witness evidence called on behalf of the Defendant, Mr Collins also submits that the Defendant cannot invite the Court to draw favourable inferences from the records which are lacking in completeness due to the Defendant' failures. The right

approach is for the Court to judge the Claimant's case benevolently and the Defendants' case critically (cf. *Keefe v Isle of Man Steam Packet Company* [2010] EWCA Civ 683; *Raggett (deceased) v King's College Hospital NHS Foundation Trust* [2016] EWHC 1604 (QB). *Keefe*, *Raggett* and *Harding v Buckinghamshire Healthcare NHS Trust* [2017] EWHC 2393 are all instances where lack of important evidence was a consequence of the defendant's breach of duty and support for the proposition that in such circumstances the court should judge the claimant's case benevolently and the defendant's case critically where that has led to a lack of information.

64. The Defendant submits that this is not such a case. The absence of the key witnesses is explained by the Civil Evidence Act notices, primarily by lapse of time, so no adverse inference is warranted. In any event, the events took place too long ago for those involved to remember the events, or for their evidence to be useful. As far as the notes are concerned, the reasons for the orthopaedic team's decisions are obvious, or can reasonably be inferred from the notes, which were short but not unduly so in accordance with the practice in 1999/2000.

65. It is right that the CEA notices were served with little information, and that there is no notice or evidence as to the whereabouts, for example of Mr Mannion, who was also involved in the Claimant's care. Whilst it is a long time ago, much of the evidence has been about what practices were in 1999/2000. It would have assisted to hear from those involved what their practices were at that time on the main issues, even if they did not recall all the detail of this case. As it is, I disagree with Mr Martin that the reasons for the orthopaedic team's decisions are obvious in all aspects, or may reliably be inferred from the notes. The evidence of Mr McFadyen as to the importance of the degree of purulence and progress on 16 August 1999 highlights one significant example of an instance in which the inference invited is benevolent to the Defendant. The dispute over the meaning of "the problem" in the letter of 6 March another, in addition to several unexplained dead ends in proposed treatment which are at the heart of this dispute.

66. Professor Atkins accepted that even where note taking was as it was in 1999/2000, at a bare minimum the notes should enable a reader to understand what the plan was, and why it was being undertaken. Where the notes fall short, and are ambiguous or there are gaps, I accept that even though the burden remains on the Claimant, the Defendant should not have the benefit of those deficiencies, nor of unexplained lack of explanatory witness evidence.

<u>Evidential Points</u>

67. I have considered the evidence given in this case with the *Bolam/Bolitho* test in mind. I take account of the eminence and undoubted competence of Professor Atkins, but have reluctantly concluded that in some respects in this case, his evidence was either diverted away from independence and genuine belief by errors underpinning judgements he made, which he then felt the necessity to justify, or that as a result his evidence on these aspects is not soundly based in fact. In particular, the error about the size of the wound led to his initial view both that the wound was healing rapidly, justifying a wait and see policy, and the options for tissue coverage of the wound. Similarly, his error about the unavailability of free flap surgery in 1999 underpinned his view that the approach taken in relation to tissue coverage was justified at the time. Once these errors were identified, Professor Atkins changed his approach, but only so

as to maintain his original position, continuing to ignore some of the available documentary evidence. In this respect the criticisms made by the Claimant of his evidence are justified. Nonetheless, it is not merely a question of preferring one expert's views against another.

68. In relation to breach of duty I have also considered the overall evidence of the experts, including those primarily addressing causation. Both Claimant and Defendant have drawn attention to aspects of their evidence in support of the evidence of the orthopaedic experts on breach of duty. Whilst it is accepted, for example, that the antibiotic regime can be criticised, it is no longer relied upon by the Claimant as founding a separate head of breach of duty causing chronic osteomyelitis. The Claimant nonetheless relies upon the evidence of Dr Shetty that she was unable to tell from the notes why antibiotics were not given after surgery in March because there was no documentation of "any coherent decision-making process" as evidence not only of poor note keeping but of an endemic lack of planning and management of Mr Asante's care.

69. The evidence of the microbiologists, haematologists and plastic surgeons as to the issue of whether chronic and acute osteomyelitis is capable of cure has been relied upon by both parties not only in relation to causation, but also breach of duty. It has always been the Claimant's case that the clinicians were treating him to cure acute osteomyelitis, and that had he been treated properly, for chronic osteomyelitis, an unstable wound and chronic pain would have been avoided.

70. Professor Atkins expressed the view forcefully that it was not possible to cure osteomyelitis, particularly in patients with SCD for the reasons given in his evidence and previously set out. This view was part of his reasoning in concluding that debridement surgery in August was a possible course of action, but one which was not mandated. In essence, because of the additional factor of SCD, it would not be worth the risk. As a result the Court has heard oral evidence, and been taken to literature, which the Claimant contends provides multiple examples of cure, thus undermining Professor Atkins' opinion, Of the experts, Dr Ryan said from a haematology perspective, having considerable experience of sickle cell patients, many of whom suffer osteomyelitis: "*...the cases of chronic osteomyelitis I have seen over the years have generally been in people from abroad who have had suboptimal treatment, or occasionally cases where people have not accessed healthcare in the way that they should have done, but I can only recall one going back to a child going back in the 1990s who had chronic osteomyelitis which was multifocal. Eventually things did resolve with appropriate treatment.*" Dr Ryan gave evidence of her experience of seeing many patients' x-rays over the years on which lucencies can be seen, which are "remodelled old infarcts", i.e. the areas are small and resolved. The haematologists also agreed in their joint statement that sickle cell disease is not a contraindication and can easily be managed pre-, peri- and post-operatively.

71. Professor Nanchahal gave evidence as to the surgical management of osteomyelitis, including the prospects of success for a local gastrocnemius flap in these circumstances. Professor Nanchahal explained the benefits of a well-vascularised soft tissue envelope, including the creation of an environment for suppression of bacteria, supported by medical research papers by *Gosain et al* (1990) and *Calderon et al* (1986). He concluded that the chance of total flap failure would have been minimal, and that the worst-case scenario, for which the risks were very low. Would be that there would be

small, patchy areas of necrosis. In this respect he drew on papers by *Cooper et al* (2016), and *Heckler at al* (1977).

72. The Defendant relies upon the lack of an example of any record in the literature, or given by the experts of a patient who had SCD, osteomyelitis and a flap. Mr Varma said: "*In my consultant practice since 1993 I've never been referred a patient with acute osteomyelitis with a request to do flap surgery and it's not described in textbooks, it's not described in journal articles, there is no published articles which show a series of flap use in acute osteomyelitis.*"

Breach of Duty – Submissions and Conclusions

August/September 1999

73. It is clear from the notes available, that the clinicians were aware of the possibility of the necessity for further debridement and of tissue coverage by a rotational flap as both are mentioned. What is not explicit is why, once the possibility of further debridement, or a rotational flap had been considered they decided not to take those courses of action.

74. Mr Martin, for the Defendant, submits that from the notes of 13 to 16 August it can be inferred that they considered, but rejected, further debridement because of the progress that was being made, despite the wound being purulent on 16 August. Therefore, there is no justification without the benefit of hindsight, to conclude that the clinicians were negligent in not committing to more debridement leading to a flap, a more aggressive treatment, at 72 hours after incision and drainage even if there were purulence. There were obvious risks associated with debridement – and indeed with the more substantial bone transport operation envisaged as necessary by Professor Atkins on the basis of his view about the presence of infarcts encouraging infection in a SCD patient – which would justify a conservative approach. The course of action they took was a reasonable course which would have been in accordance with practice at the time.

75. Further, Mr Martin repeated Professor Atkins' assertion that the notes show that the wound continued to progress because it was 9 x 3cm on 17 August and 4 x 1.5cm on 20 August. In the interim, on 19 August the team noted that the wound was large, open and discharging with the bone exposed, but the significance of this was heeded and through the notes on 22 August wound closure and/or a graft were being considered. The wound progressed and a decision was taken to close it directly on 1 September, when it was noted to be clean and showing signs of granulation. Again, this was a reasonable practice in 1999 Professor Atkins' evidence and the evidence of Mr Varma. Any other conclusions would be based upon hindsight.

76. The Claimant submitted that on the face of the totality of the notes as to the wound size and condition over the period 14 to 22 August 1999 there was no evidential basis for a finding that the wound was healing rapidly, nor that it was taking an expected course, which was the basis upon which Professor Atkins' opinion that the conservative and expectant treatment of the wound was reasonable and appropriate practice was predicated. The references to the wound being "large and exposed" on 19 August, and having approximately 5cm of exposed bone on 20 August, the same day as the measurement of 4cm x 1.5cm relied upon by Professor Atkins, and the two diagrams on 22 August showing a wound similar in size to that of 17 August undermine the primary justification for Professor Atkins' approach.

77. In addition, the suggestion that debridement, and the use of a flap thereafter was such a radical approach as to terrify the clinicians in 1999 so that a conservative approach was justified in the circumstances of the Claimant's condition was a late addition by Professor Atkins and not sustainable on the evidence. The clinicians were clearly contemplating debridement in August (and indeed carried out a successful wide debridement in March without catastrophic consequences envisaged by Professor Atkins arising), and the use of a flap, but did not do so. That was not a course of a treatment which was reasonable and appropriate when the Claimant was left with exposed cortical bone for a period from 13 August to 3 September. Professor Atkins agreed with the general view of the other experts that exposed cortical bone without periosteal cover would be at risk of desiccation and liable to necrose and form a nidus for deep infection, and that in the absence of tissue cover it was unlikely that osteomyelitis would be cured. His views on the sufficiency of gauze dressings were not supported by other expert evidence in the case.

78. In the circumstances, Mr Collins submitted that leaving the wound open over a protracted period, and then attempting direct closure was as Mr McFadyen said, bound to fail, and no reasonable body of clinicians at the time would support it. Although both Professor Atkins and Mr Varma emphasised that direct closure was possible as no skin had been excised, there was no spare skin on the shin, the diagrams indicated that over that period the skin had retracted, and the wound edges had become swollen, making direct closure more difficult.

79. I have concluded on the evidence that it is more likely than not that the purulence on 16 August was still significant and had not reduced dramatically, even though some progress was noted. I come to that conclusion because the culture which was noted as being awaited on the day showed staph aureus osteomyelitis, because the note the next day shows a larger wound than previously, and because the next note on 19 August refers to the wound discharging. I am not prepared to make the inference the Defendant seeks, that there must have been significant improvement because a decision not to go to theatre was taken. Throughout the treatment of the Claimant there are instances of other insufficiently explained decisions which on scrutiny appear to show a similar pattern. An example is the note on 22 August 1999 considering theatre on Friday for rotation graft. The note on 26 August that the x-ray showed no osteomyelitis, and the wound was clean dry and non-infected was within that time frame, but the decision was taken to wait and see, rather than take the opportunity for surgery of any kind, which did not take place till 3 September. Similarly, despite referral in January the letters of January, February and March show no urgency or direction. Even after the guttering operation, on 20 March the registrar noted there should be consultation with Mr Smith about staph aureus, but not to treat at present. The ward round note the following day records that the wound was discharging yellow pus, and staph aureus was grown from the bone biopsy, but, nonetheless, on 23 March the Claimant was prescribed antibiotics and discharged to outpatient care. The plan again was for the wound to heal by secondary intention, but if problems were experienced then a muscle flap or skin graft could be considered. On 10 April, after the Claimant had been readmitted with pain caused by infection on 6 April, the wound was still oozing and the registrar questioned whether a muscle flap was indicated. This was not actioned but raised again on 13 April, and on 14 April 2000 the nursing notes record that "*Mr Smith, wants to perform gastrocnemius flap at some stage next week if swab results negative*". However, three days later, on 17 April, the nursing note records that Mr Smith was happy for discharge

with assistance from the daily district nurse for dressings, and the Claimant was discharged the following day. There is no record of whether the swab tests were negative or not. In August 2000 the possibility of a gastrocnemius flap was raised again, with excision of a bone segment and bone transport, but left for Mr Smith's return from holiday. There is no note of the treatment being considered further.

80. I find therefore that the overall picture on the face of the notes is suggestive of indecision and inertia by the treating clinicians at points where important decisions had to be made, and even without applying a benevolent eye to the Claimant's case, the weight of the evidence points to there being significant purulence on 16 August and a similar lack of appropriate action. In this regard I take into account the passage of cross-examination of Mr McFadyen set out in paragraphs 50 and 51 above, in which he fairly conceded that were the purulence to be significantly reduced, return to theatre would not have been mandated. However, having found that there was no such reduction in purulence, and that Professor Atkins is in error in concluding on the documents that the wound was reducing, I conclude that his opinion on this aspect of the case is unsupported. Similarly, there is no other support for his view that the fact of SCD would have determined a different approach to surgery. Having regard to the common position of the experts both that it was known in 1999 as well as now, that the earlier osteomyelitis is treated the better the chance of success and that the treatment should involve removal of infected or necrotic material, the purulence on 16 August, anticipated by the note as to the possible need for further surgery, should have led to Mr Asante being returned for surgery on 16 August. I accept the evidence of Mr McFadyen that no reasonable body of surgeons would have done otherwise.

81. In addition, I conclude that the exposure of the bone should have led to a gastrocnemius flap being used to provide tissue cover after debridement, or in any event as anticipated. It is apparent from the notes that whilst there had been no skin excision, the wound edges had shrunk leaving a significant area of exposed bone. Professor Atkins initial view that a flap could not be used was based on the errors identified. Thereafter, I find his evidence that the bone could be kept moist by dressings unsupported by any of the other evidence. By 22 August or at latest 26 August the wound was clear of purulence and the surgery could have been carried out. The wait and see policy adopted to see if the wound healed led to a further week's exposure of the bone before direct closure was attempted. Professor Atkins accepts that it was doomed to failure with hindsight. On the weight of the evidence I find that it should have been clear to the treating clinicians that it would be doomed to failure, given the nature and position of the wound. No reasonable body of orthopaedic surgeons would have left the bone exposed with the risks of infection that entailed. No effective alternative was attempted once the wound opened up, supporting the conclusion of inertia, rather than considered action. The wound took months to heal, and by December 1999 the osteomyelitis was being regarded as chronic.

March/April 2000

82. The Claimant's case is that after November 1999, when staph aureus was identified again. The surgery, which was not undertaken until March, should have taken place much sooner. Surgery was undertaken in March which involved guttering and the removal of a large area of bone. Having undertaken successfully the riskiest part of the procedure, no antibiotics were given for 4 days, and no tissue cover was provided. There was a good clearance of infection immediately after the surgery, as confirmed by

histology. Soft tissue coverage would therefore have had good prospects of success. There was no reason not to undertake surgery for tissue cover, when it was foreseeable, given the history, that failing to do so would both leave Mr Asante with a substantial defect in his leg involving a very thin layer of skin; and would result in failure to resolve his osteomyelitis. A gastrocnemius flap should have been used to provide tissue cover. In respect of this period also, therefore, the Claimant's primary case is that Professor Atkins is wrong to assert that a responsible body of professional opinion would have failed to perform a muscle flap following debridement. The only plausible explanation which can be derived from the notes boils down to a lack of a coherent management plan. Alternatively, if a body of professional opinion would have supported leaving the wound as it was left in this case, it cannot be logically supported.

83. Mr McFadyen considers that the letter of 6 March refers to a cure for osteomyelitis. In support of the contention that the operation was not simply intended to remove the sequestrum, but to cure the osteomyelitis, which by then was reported as having elements of chronicity, the Claimant relies upon the contemporaneous records, which refer to guttering and removal of sequestrum. Further, in this respect Mr Asante's own evidence was that he understood the operation was to clear the osteomyelitis.

84. Although it is not contended that on its own, the delay in starting antibiotics after the surgery made any material difference, the Claimant submits that Professor Atkins' evidence excusing the failure, unlike other experts, also undermines his credibility. Professor Atkins sought to explain this approach as reasonable on the basis that a staph aureus infection would have been prevented but some other infection would have arisen. There is nothing in the notes to support Professor Atkins' suggestion that a conscious decision was taken not to give antibiotics in order to avoid an antibiotic-resistant infection. Dr Shetty's evidence was that antibiotics were needed because there would be some remaining staph aureus organisms in the bone. That was the primary risk, not other superficial wound infections. Professor Wilson confirmed that in the absence of antibiotics, the organisms would seed into healthy bone, albeit that could be cured by a long course of intensive antibiotics.

85. The Defendant contends that Mr Smith's intention to carry out a guttering operation, but not to cure the osteomyelitis, is clear from his two letters dated 8 February and 8 March 2000. The osteomyelitis was by then chronic, and, as Mr McFadyen acknowledged in the joint statement, "*a guttering procedure performed in isolation to address a sequestrum without eradicating all the osteomyelitis was acceptable practice in 1999*". Mr McFadyen added "*if it is accepted that this was not the case and the orthopaedic team were no longer aiming to eradicate osteomyelitis, then he would accept the position that a guttering procedure without a robust antibiotic plan and without a surgical procedure to provide soft tissue cover was acceptable practice in 1999*." The Defendant submits that that was what was attempted and achieved in this case. Professor Atkins infers from the letter that this is what was intended and that it was "*absolutely standard treatment for a sequestrum within the context of a chronic osteomyelitis*." His opinion is that cure of the underlying infection was not possible. The notes of 29 March, 5 May and 6 June 2000 show the decision to let the wound heal by secondary intention was a deliberate one because the team thought that would be best.

86. Having considered the documentary evidence, and in particular the letters in January – March 2000, I conclude that in this instance Professor Atkins is more likely to be right

that the aim was to remove the sequestrum, and not to cure the osteomyelitis. There had been a slow response to the very long period towards the end of 1999 over which the wound had failed to heal. There was then a pervading note of lack of confidence and ambition in the letters prior to 6 March ("*I doubt whether there is anything to be done... If you feel there is nothing more to be done…*"; on 3 January "*suggestive of chronic osteomyelitis…*"; and 2 February, "*I am not sure if surgery will help here but let's find out if there is something we can correct…*"). I conclude that the letter of March 6 shows the cavity/sequestrum was viewed as something which could be corrected against a background of what was viewed as chronic osteomyelitis.

87. That being the case, and having regard to the evidence of Mr McFadyen on this issue, I find that the treatment in that context was that of a reasonable body of orthopaedic surgeons at the time, irrespective of whether more could have been done to achieve a different outcome.

Causation

88. I have concluded that on 16 August 1999 the Defendant was in breach of duty in failing to take the Claimant back to surgery for further debridement, followed by tissue cover provided by a gastrocnemius flap. An outline of the evidence on causation has been set out above in relation to breach of duty, but needs to be considered in the light of the different test.

89. The Defendant contends that chronic osteomyelitis was unavoidable. In submissions Mr Martin returned to Professor Atkins' opinion, and in particular three points he made in his report: firstly, that a muscle flap cannot eradicate the chronic bone infection in a case such as this, and may, by providing a sealed soft tissue environment around the area of chronic osteomyelitis, precipitate an acute osteomyelitis flare-up with abscess formation beneath the muscle flap, causing severe pain and potentially life-threatening sepsis; secondly, antibiotics cannot eradicate chronic osteomyelitis because the osteomyelitic bone is substantially avascular and the antibiotics do not penetrate and kill the bacteria; and therefore, a further debridement and reconstruction of the soft tissue defect with a muscle flap combined with antibiotic therapy would not have eradicated the infection. Chronic osteomyelitis would have continued. In evidence he said there was no cure in a case of osteomyelitis in a SCD patient. Professor Atkins acknowledged that a flap probably would not have failed.

90. Mr Varma gave evidence that that if flap surgery had to be undertaken, then there would have had to be very extensive debridement with the aim of achieving a culture negative, vascularised bone. This was probably not achievable in SCD, and a culture negative bone was not achieved. Successful flap surgery, after adequate debridement and appropriate supportive care, would have meant that the Claimant probably would not have had the thin tender scar over the proximal tibia. Mr Varma also pointed out that the records demonstrate that by about September 2000 the osteomyelitis had resolved, without flap surgery. The Defendant submits that there is no harm attributable to any breach of duty.

91. For the Claimant, Mr Collins submitted that the overwhelming preponderance of the evidence supported the case that but for the failure to take the Claimant back to theatre on 16 August 1999 shortly after his initial operation, carry out further debridement, provide tissue cover by flap with appropriate antibiotics, the Claimant would have been

cured of osteomyelitis. When Professor Atkins said there was no "cure", he discounted as a cure significant periods of absence of osteomyelitis, which was a definition unsupported by other experts. His evidence on the effect of infarcts was not supported by other expert evidence, and was developed late in the day. The fact that the studies did not refer specifically to patients with SCD did not make them less valid as to recovery rates. Dr Ryan gave evidence of her experience. Professor Nanchahal put the chances of a flap succeeding very high and insisted that a flap could have been put on, with suitable patient optimisation, even if the bed was not culture negative, because of the therapeutic effects of the flap.

92. Mr McFadyen said in evidence that, by the end of 2000, the Claimant, "*still had chronic pain, he now had a crater in his leg with exquisitely tender friable skin that -- an extremely thin layer of skin that had formed over that, that has really troubled him over the ensuing years, so -- and this is where I go back to defining success. I'm struggling to identify a symptom now that is better than before they started the guttering procedure, and he is also, then, still left with chronic osteomyelitis that troubles him over the ensuing years. I can't identify a symptom that is better.*"

93. I have concluded that as with breach of duty in relation to causation Professor Atkins' evidence that there could never be a cure for osteomyelitis in an SCD patient needs to be considered with care. It entails a limited definition of "cure" where even if osteomyelitis was absent for decades, he would not consider that a patient was cured. His evidence as to the part played by infarcts is not supported by other evidence. Mr McFadyen and Dr Ryan's opinions that there are lucencies not infarcts, echoes the reference in the letter from the haematologist registrar in January 2000 to lucencies on the x-ray. Whilst Professor Atkins is supported in some respects by Mr Varma, on one aspect, namely that there could be no cure, Mr Varma's evidence is not supportive in that he concluded that osteomyelitis was cleared by September 2000.

94. I further bear in mind firstly that Professor Atkins told the Court in his evidence in chief that osteomyelitis "is less likely to become chronic if you get in very early", and secondly that whilst maintaining there could be no cure, he agreed in cross-examination that exposed cortical bone without periosteal cover would be at risk of desiccation and liable to necrose and form a nidus for deep infection.

95. Mr Martin raises the question of the parameters of this hearing, bearing in mind it does not encompass quantum. As he has submitted that no harm has been caused by breach of duty, it is necessary to set out my conclusions supporting my judgment that the Claimant was caused harm by the breach of duty in August 1999. On the evidence currently available, had he been treated by debridement, flap and antibiotics, the likelihood is that he would have been cured of osteomyelitis, or at least free from it for a long period. Flap surgery would have succeeded and the current type of crater with friable skin would have been avoided. He would have avoided the long subsequent history of infection and pain specifically attributable to it. For any hearing on quantum, there will need to be further evidence on these issues and others.

96. The Claimant therefore succeeds on the issues of breach of duty and causation. In the absence of agreement, I invite further submissions as to costs and the future conduct of the outstanding quantum trial.