Scottish Parliament Region: Mid Scotland and Fife

Case 200703272: Forth Valley NHS Board

Summary of Investigation

Category

Health: Hospital; Paediatrics

Overview

The complainants (Mr and Mrs C) raised a number of concerns about the care and treatment provided to their baby daughter (Baby C) and Forth Valley NHS Board (the Board)'s failure to diagnose meningitis and hydrocephalus when she was seen by clinicians at Stirling Royal Infirmary (Hospital 1) on 20 September 2007.

Specific complaint and conclusion

The complaint which has been investigated is that the Board failed to provide reasonable care and treatment to Baby C on 20 September 2007 (*upheld*).

Redress and recommendations

The Ombudsman recommends that the Board:

(i) apologise to Mr and Mrs C for the failings identified in this report;

(ii) carry out a root cause analysis of the inadequate assessment on 20 September 2007. This should explore why the obvious concerns of the GP were not addressed by the junior paediatricians. It should also establish whether the staff grade doctor involved in the decisions was sufficiently trained and experienced to be in this position of responsibility. The Board should then give consideration to further training for the relevant staff in light of the results of their analysis of the case. They should also provide Mr and Mrs C with a full and detailed explanation of their findings and the steps that will be taken to prevent recurrence; and

(iii) note the specialist medical adviser's comments that a cranial ultrasound scan should have been performed on 20 September 2007 to exclude a build up of fluid in the brain.

The Board have accepted the recommendations and will act on them accordingly.

Main Investigation Report

Introduction

1. The complainants (Mr and Mrs C) brought their complaint to the Ombudsman on 30 March 2008. The complaint had exhausted the complaints procedure of Forth Valley NHS Board (the Board) and was, therefore, eligible to be investigated by the Ombudsman. Mr and Mrs C complained to the Ombudsman about the care and treatment provided to their baby daughter (Baby C) and the Board's failure to diagnose meningitis and hydrocephalus when she was seen by clinicians at Stirling Royal Infirmary (Hospital 1) on 20 September 2007.

2. The complaint which has been investigated is that the Board failed to provide reasonable care and treatment to Baby C on 20 September 2007.

Investigation

3. Investigation of the complaint involved reviewing Baby C's medical records relating to the events and the Board's complaints file. I also sought the views of a specialist medical adviser (the Adviser) to the Ombudsman on the paediatric aspects of this complaint.

4. I have not included in this report every detail investigated but I am satisfied that no matter of significance has been overlooked. An explanation of the abbreviations used in this report is contained in Annex 1. A glossary of terms used in this report can be found at Annex 2. Mr and Mrs C and the Board were given an opportunity to comment on a draft of this report.

5. Baby C was born at Hospital 1 on 29 August 2007 and was discharged on the same day. She was seen at home by a health visitor on a number of occasions over the next three weeks. She also had a hearing test at Hospital 1 on 7 September 2007.

6. On 19 September 2007, Baby C was seen by a health visitor at a baby clinic. Mrs C raised concerns about her weight and other issues. An appointment was arranged with a GP for the following day. The GP examined Baby C and sent a fax to the receiving paediatrician at Hospital 1. She said that Baby C was not particularly keen to feed and had vomited after being fed. She also said that Mrs C had concerned her by stating that Baby C constantly arched her back and kept her head extended. The GP stated that Baby C did

this whilst being examined. She also said that she considered that her fontanelle was bulging. The GP said that she could not find anything else abnormal and requested the paediatrician's advice.

7. Baby C was admitted to Hospital 1 on the same day for observation. The medical records state that she had been referred by the GP because she kept her head extended and had a bulging fontanelle, but she could not be examined properly on admission, as she was crying. It was recorded that she should be reassessed when she was quiet. A paediatrician examined Baby C and noted that she had been admitted with poor feeding and that she vomited considerable amounts after each feed. A plan was made to observe her feeding pattern. Blood and urine tests were also carried out for any signs of infection.

8. The tests completed showed no sign of infection and Hospital 1 discharged Baby C on 21 September 2007. The discharge letter said that the diagnosis was poor feeding and that Baby C had been prescribed with gaviscon. In response to our enquiries about this, the Board said that this would be the first stage of treatment for an infant with frequent vomiting and possible gastro-oesophageal reflux. The discharge letter also said that Baby C should be seen in the out-patient clinic in one week's time.

9. A health visitor visited Baby C at home on 25 September 2007. She was then reviewed at Hospital 1 on 27 September 2007. She became increasingly floppy and the family were allowed to return home to collect belongings before coming back to Hospital 1. Baby C had a bulging fontanelle and widely separated sutures and tests showed the presence of meningitis. A cranial ultrasound was carried out and this showed the presence of hydrocephalus. Baby C's condition deteriorated and a ventricular tap was performed.

10. Baby C was transferred to the Royal Hospital for Sick Children in Edinburgh (Hospital 2) and had a CT Scan on arrival. She was then taken to theatre for a ventricular access device insertion. Tests confirmed a diagnosis of meningitis and hydrocephalus. Baby C remained in the Paediatric Intensive Care Unit until 1 October 2007. She was discharged from Hospital 2 on 29 October 2007.

Complaint: The Board failed to provide reasonable care and treatment to Baby C on 20 September 2007

11. I referred the case to the Adviser for comment. In his response, he said that it was clear that the main problem was the delay in recognition of the group B streptococcal illness that caused meningitis and hydrocephalus. He said that he considered that there was evidence of an unsatisfactory assessment of Baby C on 20 September 2007. He also said that he considered that this led to an incorrect diagnosis of gastro-oesophageal reflux and a delay in the recognition of both meningitis and hydrocephalus.

12. The Adviser said that the bulging fontanelle was one of the key reasons that the GP had referred Baby C to Hospital 1. He commented that although there was a record of a measurement of the occipital frontal head circumference, there was no evidence that it had been noted that this showed an abnormally large increase compared to the measurement at birth. The Adviser also said that the separation of the sutures, the junctions of the plates of bone of the skull that separate when the brain is enlarging, were key features when Baby C was admitted on 27 September 2007. However, there were no comments about this in relation to the admission on 20 September 2007. The Adviser said that there was a comment in the medical records that the fontanelle was bulging, but this was put down to Baby C crying. The said that there was no record that the bulging fontanelle was reassessed when Baby C was quieter. The Adviser also said that this would have been the time to check for separation of the sutures.

13. I asked the Adviser for an explanation of the implication of an abnormal increase in the occipital frontal head circumference measurement and the separation of the sutures. In his response, the Adviser said that the human skull is composed of plates of bone that gradually fuse together to form the solid bony covering that protects the brain. The younger the baby, the less these are joined together. With any infection or inflammation anywhere in the body, there is swelling and if this occurs in the brain and its surrounding membranes, it will cause the skull plates to move further apart in the baby. This will increase the circumference of the skull which is easily and routinely measured with a tape measure around the widest part of the head. This is usually referred to as the occipital frontal head circumference. Infection of the fluid around the brain (meningitis) will also make that fluid sticky and more likely to clog up the fine passages that usually allow the free flow of fluid from within to outside the brain.

If this becomes obstructed then the fluid spaces expand and the head circumference rises further.

14. The Adviser also explained that the fontanelle is where the edges of the plates of the skull are at their most distant and so any internal pressure will cause it to bulge. There is a normal blood filled sinus, which is like a large vein, underneath the fontanelle. The fontanelle can often be seen gently pulsing. It may also bulge temporarily during vigorous crying. All babies have their head circumference measured soon after birth and it is usual good practice to repeat this measurement, especially in babies who are unwell. Individual measurements of a baby's length, weight and head circumference are recorded in a graph that shows babies' measurements in terms of centiles. For example, to be on the 3rd centile line means that 3% of babies are smaller and 97% are larger.

15. Most babies' measurements over time run along the same centile line. However, with illness, they may cross to another. For example, a baby born on the 50th centile may drop steadily down to the 3rd centile if they are unable to feed due to illness or lack of food. The head circumference normally gives a false reading for the first few days due to the pressure of birth. However, thereafter it normally stays on the same centile line if the baby grows at the usual rate.

16. The Adviser also provided comments on what a reasonable assessment of Baby C would have consisted of. He said that the examining paediatrician should have read the concerns of the GP about the bulging fontanelle and Baby C's general poor health. The examining paediatrician should have assessed for signs of raised pressure in the brain, by observing the fontanelle when Baby C stopped crying and by feeling for any separation of the sutures. The Adviser said that this should have included a careful head circumference measurement and plotting on the growth chart. If there had been evidence of a bulging fontanelle at rest, then a head ultrasound check should have been carried out to look at the size of the water spaces in and around the brain.

17. The Adviser commented that blood tests were done, but no comment was made of the white blood cell count of 18. He said that on 20 September 2007, staff had recorded a comment about asynchronous eye movements and about this possibly being associated with 4th or 6th cranial nerve palsy. The Adviser said that this should have been checked in the subsequent reviews.

18. The Adviser also said that Baby C's occasional arching of her back had been noted by Hospital 1 on 20 September 2007, but this had not been cross-checked with the history of bulging fontanelle, as it might in itself suggest meningism, although this was usually in older children. He commented that Hospital 1 had recorded that Baby C had settled, but the focus was on her vomiting, for which gaviscon was prescribed, suggesting a degree of gastro-oesophageal reflux. He also said that Hospital 1's summary of the clinical observations omitted any reference to the GP's original concern about bulging fontanelle. The summary also incorrectly stated that Baby C was two days old. The Adviser commented that the possible separation of the sutures was not mentioned and thus not excluded. He stated that with all of the worrying signs of possible cranial nerve palsy, bulging fontanelle and sleepiness, a cranial ultrasound scan should have been performed on 20 September 2007 to exclude a build up of fluid in the brain.

19. We asked the Adviser what the implications of the inadequate assessment of Baby C were. In his response, he said that it was clear from the evidence that by 27 September 2007, Baby C was showing all the signs of raised intracranial pressure with bulging fontanelle, separating sutures, 'sunsetting' of the eyes (this is where the whites of the eyes are visible below the upper eyelid), inactivity and shallow breathing. The Adviser said that a cranial ultrasound confirmed the large build up of fluid in the brain (hydrocephalus) and the tapping of some of this fluid probably saved Baby C's life. He said that this also allowed the diagnosis of group B streptococcal meningitis and that wisely, antibiotics were commenced before the tapping of the fluid. The Adviser commented that the management on 27 September 2007 was efficient and referral for further specialist management was appropriately arranged and documented.

20. The Adviser also stated that the difference between the management of Baby C on 20 September 2007 and 27 September 2007 was dramatic. He said that Baby C was clearly much sicker on 27 September 2007, as the disease had advanced, but it also showed that the investigations and consultant expertise were available on the first admission. He said that the more junior doctors appear to have underestimated the signs that were visible on 20 September 2007. The Adviser stated that the inadequate assessment of Baby C significantly risked her survival and that only timely ventricular tap and ventilation prevented a more serious situation. He also said that this may have

resulted in permanent damage to her brain. He said that delayed treatment of meningitis leads to hydrocehalus and hearing loss, with possible further damage to the brain and lasting physical and learning disability.

21. The Adviser also commented on the Board's response to Mr and Mrs C. He stated that although their complaint was upheld, the response merely stated the chronology of events. He said that the main area of concern was the assessment on 20 September 2007. However, there was no evidence that the clinicians involved had provided any information for the response or reasons why a diagnosis of feeding problems was made and the signs of bulging fontanelle disregarded.

22. I sent a copy of a draft version of this report to the Mr and Mrs C and to the Board for comment in line with our normal procedure. In their response, the Board said they believed that Baby C developed late onset group B streptococcal meningitis and this was not clearly evident at initial presentation on 20 September 2007. They said that it is likely that Baby C had the infection from birth, but that it is difficult to diagnose. The Board said that staff should have addressed the GP's specific concerns that Baby C constantly arched her back and kept her head extended and that her fontanelle was bulging. The Board also stated that group B streptococcal meningitis was quickly detected following reassessment on 27 September 2007 when the disease had advanced. They said that consultants rely on staff to highlight any concerns to them. The Board said that there were no concerns raised on 20 September 2007 and, consequently, a consultant was not involved in the assessment of Baby C.

Conclusion

23. I have carefully considered the evidence, the advice I have obtained and the comments I have received from Mr and Mrs C and the Board. The Adviser has stated that the GP's concerns about the bulging fontanelle were not fully addressed. This should have been a critical part of the assessment of Baby C and should have been checked when she stopped crying. The Adviser also said that the omission of any reference to an assessment for separation of the sutures from the records and from the apparent clinical reasoning on 20 September 2007 was a major professional failing, especially in view of the comments in the GP's referral letter. I see no reason not to accept the Adviser's comments. I, therefore, uphold the complaint.

Recommendations

24. The Ombudsman recommends that the Board:

(i) apologise to Mr and Mrs C for the failings identified in this report;

(ii) carry out a root cause analysis of the inadequate assessment on 20 September 2007. This should explore why the obvious concerns of the GP were not addressed by the junior paediatricians. It should also establish whether the staff grade doctor involved in the decisions was sufficiently trained and experienced to be in this position of responsibility. The Board should then give consideration to further training for the relevant staff in light of the results of their analysis of the case. They should also provide Mr and Mrs C with a full and detailed explanation of their findings and the steps that will be taken to prevent recurrence; and

(iii) note the Adviser's comments that a cranial ultrasound scan should have been performed on 20 September 2007 to exclude a build up of fluid in the brain.

25. The Board have accepted the recommendations and will act on them accordingly. They have also offered to meet Mr and Mrs C to convey the apology and clarify any outstanding issues. The Ombudsman asks that the Board notify him when the recommendations have been implemented.

Annex 1

Explanation of abbreviations used

Mr and Mrs C	The complainants
The Board	Forth Valley NHS Board
Baby C	The complainants' baby daughter
Hospital 1	Stirling Royal Infirmary
The Adviser	Specialist medical adviser to the Ombudsman
Hospital 2	Royal Hospital for Sick Children in Edinburgh

Annex 2

Glossary of terms

Asynchronous eye movements	Eye movements that are not simultaneous
Centile lines	Percentage lines
Cranial	Relating to the skull
Cranial nerve palsy	Paralysis of the cranial nerve
Fontanelle	The membranous spaces at the juncture of an infant's cranial bones that later ossify
Gastro-oesophageal reflux	The return of stomach contents back up into the oesophagus
Gaviscon	A medication used to prevent regurgitation of the stomach contents
Group B streptococcal illness	A bacterial infection that is a leading cause of meningitis
Hydrocephalus	Build up of fluid in the brain
Meningitis	Infection of the membranes around the brain
Occipital frontal head circumference	Measurement of the widest part of the head
Sutures	The junctions of the plates of bone of the skull that separate when the brain is enlarging
Ventricular tap	Tapping to relieve intracranial pressure