

**Root Cause Analysis
Investigation Report
2014/41975**

Root Cause Analysis Investigation Report

Incident Investigation Title:	Unexpected Child Death
Incident Date:	14/12/2014
Incident Number: <small>(Steis No or unique identifier)</small>	STEIS REF : 2014/ 41975

Final Report: 10th May 2016

Prepared by NHS England South (South West)

Panel Members for the Final Report:

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1. Introduction.

This report is the outcome of a multi-organisational investigation into the unexpected death of William Mead (William) on Sunday 14th December 2014. The approach taken was to identify any underlying causes or influencing contributory factors leading up to William's death so that lessons may be learned and improvements made. This greater understanding is intended to result in the risk of similar incidents occurring in the future being reduced.

2. Incident Description.

- 2.1 William was born on 27th November 2013 and tragically died on the 14th December 2014. The cause of death was established at Post Mortem as:
 - a Septicaemia (Group A Streptococcus)
 - b Empyema of left pleural cavity
 - c Bronchopneumonia with Abscess of left upper lung lobe
- 2.2 William's death was initially reported on 24th December 2014 through the STEIS (Strategic Executive Information System) by Cornwall Partnership Foundation NHS Trust, the local provider of children's services. Subsequently NHS England - South (South West) (SSW), as the commissioners of primary care, asked the family's general practice (the practice), to do a Significant Event Audit (SEA). This was done and it was shared with the NHS England SSW Quality & Safety team. At that time the cause of death was understood to be natural causes and the serious incident investigation process was therefore stood down.
- 2.3 Subsequently the coroner's inquest on 10th June 2015 identified missed opportunities for an earlier diagnosis and escalation which probably could have prevented the death of William. The investigation process was therefore re-instated jointly between NHS England SSW and NHS Kernow Clinical Commissioning Group (CCG).
- 2.4 NHS England has acted as lead investigator in partnership with NHS Kernow CCG, the latter being commissioner for the out of hours [OOH] service and NHS 111 services. South Western Ambulance Service NHS Trust [SWASFT] is the provider of the 111 services and has cooperated fully with the Root Cause Analysis. At the time Serco was the provider of the OOH service. Serco provision of Out of Hours has now ceased but its records were obtained to inform the process.

3. Terms of Reference.

3.1 Purpose

- To explore all elements of the NHS care and treatment of William leading up to his death and, in particular, care and treatment provided by the GP practice, the SWASFT 111 service and the Serco OOH service.
- To seek responses to the questions provided by William's mother Melissa Mead (Mum) regarding his care and treatment, and the experiences of the family.
- To reflect on and identify any issues or missed opportunities.
- To understand any contributory factors and identify any root causes.
- To identify learning from this incident to share and inform associated local and national sepsis work streams.

3.2 Objectives

- To identify and review relevant information in order to identify improvements and learning rather than to apportion blame.
- To work collaboratively as commissioners of the service providers involved.
- To establish how recurrence of incidents of this nature might be prevented or the risk of recurrence reduced.
- To formulate recommendations and an action plan.
- To provide a report as a record and summary of the investigation process.
- To share learning from the investigation.
- To operate an open and transparent investigation process.

4. Scope.

- 4.1 The scope of the investigation is defined as the time period covered for the purposes of fact-finding and analysis.
- 4.2 For the sake of completeness, the timeline and information gathered began from the first presentation of William at his GP practice with a persistent cough in September 2014. This is to take account of the concerns of the family that the cough and earlier illnesses were a contributory factor in the final illness.
- 4.3 Therefore the timeline included all details from the William's GP records from 30th September 2014 to 14th December 2014.

5. List of Information Gathered to Support the Investigation Process.

- Timeline/chronology of contacts with services.
- Initial management report by Cornwall Partnership NHS Foundation Trust.
- SEA and full report from the practice.
- Serious Incident Investigation & RCA, SWASFT.
- CD recordings of coroner's inquest and statements.
- Transcript of NHS 111 telephone call.
- Transcript of telephone conversation with OOH GP.
- Information provided by the parents of William, including a set of questions about William's care and treatment given to Lindsey Scott during her meetings with Mum.
- Witness statement of Mum as provided to the inquest.
- Meetings with the practice and SWASFT.

6. Investigation Team and Contributors to this Report.

6.1 RCA Team

- Deputy Medical Director, NHS England - South (South West) [SSW].
- Director of Nursing and Quality, NHS England SSW.
- Quality and Safety Manager, NHS England SSW .
- Clinical Governance Lead, NHS Kernow.

6.2 Contributors / people discussions were held with

- Assistant Director of Nursing, NHS England SSW.
- Professor Peter Fleming - Professor of Infant Health and Development
- Melissa Mead (Mum).
- Executive Director of Nursing and Governance SWASFT.
- Patient Safety Manager SWASFT.

- Regional NHS 111 Clinical Governance Lead.
- GP practice

7. Arrangements for Communication, Monitoring and Evaluation of Actions.

- 7.1 In the spirit of openness and transparency, and in line with the commitment of the organisations involved to the Duty of Candour, this report has been shared with the parents of William at various stages of its development and who have been able to contribute (see section 8).
- 7.2 Whilst RCA reports are not normally published, although they are obtainable via Freedom of Information requests, the parents of William have agreed with NHS England SSW that this one will be a collaborative release in order to raise the profile of the lessons learnt about the prevention of childhood deaths as a result of pneumonia, empyema and sepsis.
- 7.3 Equally the report has been shared in its development with the organisations involved and the named practitioners.
- 7.4 NHS England SSW will oversee the implementation of the action plan and the parents of William will be invited to be 'critical friends' in this process, in line with our commitment to public accountability.
- 7.5 NHS England SSW will ensure that the learning and the action plan both informs and is aligned with the local SW action plans and national work to prevent death of pneumonia, empyema and sepsis.

8. Involvement and Support of Family.

The parties involved in the RCA process and production of this report are Committed to meeting the Openness & Transparency requirements of public bodies, and the Duty of Candour. In this case the team involved have, they believe, done this in a totally open and new way. The parents of William have been involved at all stages in order that we could:

- Understand and include the vital information on events from the perspective of the parents.
- Have ongoing discussions with them to ensure that the conclusions and recommendations were logical to them and understandable i.e. not using language which is not clear and understandable to non-medical / clinical individuals.
- Be involved in the process of learning and the action plan which will result from this RCA.

The RCA panel / team are indebted to William's parents for their persistence in ensuring that all of the facts were understood and that lessons would be learnt, and for their understanding approach in the context of devastating circumstances for them. The parents of William do want an apology from the parties and organisations concerned. SWASFT has already issued a formal apology to them. NHS England will give an overall apology to them on behalf of all the NHS organisations involved. The OOH doctor formally recorded his apology at the inquest. One of the GPs from the practice has communicated in writing an apology to the parents and a private meeting between this GP and Mum has also taken place.

9. Description of Root Cause Analysis (RCA).

RCA is a methodology applied to support and add rigour to serious incident investigations by applying a systematic process whereby the factors that contributed to an incident are identified. It is the preferred investigation technique for investigation of safety incidents. Fundamentally, it not only looks at the individuals involved in William's death but also looks beyond the individuals concerned and seeks to understand the underlying causes and environmental context in which an incident happened.

10. Background and Summary.

This section contains a descriptive chronology of the events leading up to the death of William. It is a broad level summary of William's contact with health care professionals and service providers in the defined period. It is a summary and is supported by the documents and by interviews with individuals involved.

September 2014

On or around the week commencing the 8th September William went to nursery for the first time and attended on Mondays, Thursdays and Fridays. Mum notes that he developed a cold and cough once he started nursery and that this continued until William died. Mum notes that on occasions this would cause him to be sick and this was a daily occurrence from November.

13th September 2014 – Attendance at Royal Cornwall Hospitals NHS Trust A&E

The GP practice received a discharge notification that William had been taken to A&E by his parents, suffering from possible gastroenteritis. The records note that he had vomited 4 times that day. He responded well to fluids / rehydration and was discharged home with medical advice being given to his parents.

30th September 2014 – GP appointment, The Practice

William had been unwell with a fever for a day or two and was brought to surgery and seen by Dr Z. On examination he was found to have erythematous and exudative tonsils with a temperature of 38.5. Capillary refill was <2 and there no signs of recession or systemic distress.

William was able to drink fluids well. His chest, ears and abdomen were normal. He was diagnosed with tonsillitis and treated with Calpol and Amoxicillin.

1st October – GP appointment, The Practice

William had developed a rash and was seen at the surgery by Dr W. William was noted to have a speckled erythematous rash which was blanching over the lower aspect of his legs. At that time he was noted to be alert, well and engaging with a capillary refill of <2 seconds and a noted as a well-looking child. The notes question whether this might be a streptococcal-related rash, but as he was already on antibiotics and making a recovery he was allowed home with his parents given ongoing advice regarding nursery.

13th October 2014 – GP appointment, The Practice

William's rash had started to go down but his cough had developed into a chesty cough. Mum was concerned as the cough was persistent. Mum recalls that William seemed more tired than usual and less playful, and had become unwell at nursery where he attended 3 days a week.

William was seen by Dr Z who noted that his throat was much better. Dr Z recorded William as systematically well although noted to have had a cough for the past couple of weeks. He was noted to have been drinking and eating normally. On examination his throat was fine, his chest clear and there were no signs of respiratory distress, his capillary refill was <2 seconds and he was afebrile.

11th November 2014 – Telephone call to the Practice

On the 11 of November Mum rang the practice to say that William had been coughing and vomiting after eating. She reported that this has been going on for approximately 4 weeks. He was invited in for a review appointment.

12th November 2014 – GP appointment, The Practice

William was reviewed by Dr X. Dr X recorded that she considered William to be well and engaging. He was afebrile with a temperature of 36 degrees, capillary refill of <2 seconds, no respiratory distress, normal heart sounds and a clear chest with no wheeze or crepitations evident. Dr X noted him as 'snotty' and coryzal, noting a working diagnosis of upper respiratory tract infection with a possible potential underlying bronchospasm secondary to a strong family history of asthma. Dr X prescribed a salbutamol inhaler with an Aerochamber Plus with Infant Mask, 2 puffs as required 4 times a day. Dr X confirmed that it wasn't a 'diarrhoea and vomiting picture' but that the vomiting was due to the cough. No follow-up taken following the prescription of the inhaler.

21st November 2014 – GP appointment, The Practice

William was sent home from nursery due to his cough and the vomiting. William was seen by Dr Z who notes in the records that William had an upper respiratory tract infection, NOS, cough symptoms of the last few days on and off, and coughing causing vomiting. Dr Z considered William to be interactive and smiling, with a clear chest and normal observations.

Mum told the doctor that the inhaler was not having any effect, although this is not noted in William's record. Mum was concerned that the cough and vomiting was increasing to sometimes 6-7 times daily. Mum recalls that Dr Z said this was normal. The nursery were concerned that William was infectious and so Dr Z wrote a letter for William's parents to take to nursery to say that the vomiting was due to the cough, so he could continue to attend nursery.

8th December 2014 – Practice Nurse appointment, The Practice

William received his childhood booster vaccinations HIB and MEN C.

9th December 2014 – Notes from Mum

Mum recalls that William was not himself, tired and unwell. She had been told by the Practice Nurse on the previous day that the vaccine could often make children feel 'off colour', so she attributed it to that.

11th December 2014 – Notes from Mum

William went as usual to nursery on this day. Mum provided the nursery staff with liquid paracetamol and explained that he wasn't himself and had just had vaccines. When William was collected, the staff confirmed that he had not himself. William was taken home where he ate his dinner; he woke once in the night, was soothed and settled down again.

12th December Mum's notes and Nursery notes

William refused his breakfast, which Mum recalls as unusual as he usually enjoyed his food. He was taken to nursery as normal and arrived between 8 and 8.30am. William was noted by his key worker to be OK in the morning. He had been teething for the last two weeks so was a bit under the weather but nothing unusual. William was noted during that day to be playing, and seemed content in the morning and not overly clingy. However, his key worker did note that he did not eat his morning snack, which was unusual for him.

As the day progressed, William was noted to become more agitated and at around 11.30am William was given the liquid paracetamol provided by Mum. This seemed to help, although he did not eat his lunch and was noted to be tired, so the staff put William down for a sleep. He was noted to fall to sleep quickly. However, when he woke he was upset. The staff took his temperature and recorded it as 37.8. Staff were concerned as he had had liquid paracetamol in the previous few hours and yet the temperature was still high. They rang William's father to come and collect him.

12th December GP appointment, The Practice

An emergency appointment for William was made at the GP practice and William was taken by his father and seen by Dr Z around 4.40pm. Dr Z examined William and noted that he found William febrile and coryzal with flushed cheeks. William had been given liquid paracetamol one hour before being brought to surgery. Dr Z considered William to be alert and engaging, although quieter than his usual self.

Dr Z recalled that at the time William's temperature was 40 degrees, although this was not formally recorded in the notes. Dr Z noted capillary refill <2 seconds and no rashes. His ears were clear, throat fine and his chest was clear with no signs of respiratory distress or increased respiratory rate. Dr Z did not record the heart rate.

Abdominal examination was unremarkable and he seemed systemically well. Dr Z gave safety-netting advice should William's condition worsen, and supportive advice regarding his fever, fluids and the need for further review if he were to worsen or show any change over subsequent days. Upon leaving the appointment, William's father recalls asking when William should be taken in, upon which Dr Z's advice was that it was 'nothing grisly'.

12th December Evening notes from Mum

On the evening of Friday the 12th December, William was restless and 'not feeding'. Mum recalls that he remained restless throughout the night and that his temperature had risen again. He was given liquid paracetamol and soothed until he rested.

Saturday 13 December– Telephone call to NHS 111

Mum recalls that William was vomiting a lot more and that the vomit was green and yellow in colour. William also seemed more tired than usual. At around 4pm Mum phoned NHS 111 for advice. The NHS pathways assessment was undertaken by a call advisor and the end disposition was to receive a consultation with a health care practitioner within 6 hours via the Cornwall Out of Hours provider. In addition the patient was offered the opportunity to attend the local treatment centre.

The pathway chosen was 'Vomiting and/or Nausea'. The call lasted 14 minutes.

The detail of the call and disposition was then passed to the out-of hours provider, Serco.

Saturday 13 December - Serco Health OOH provider – telephone consultation with Dr Y.

At 6.52pm, Dr Y telephoned William's parents. Dr Y confirmed with Mum that he understood that William had been unwell, vomiting, with severe pain, and had recently had 1-year booster.

Mum advised that William had been a bit off all week but teething as well. He had gone off his food and had taken no food since the previous morning, although was taking some fluids. Mum also provided an account of visit to family GP the previous day.

Dr Y discussed William's condition with Mum and asked if she would like to bring him to the Falmouth Clinic. By this time, William had gone to bed and he seemed peaceful. Mum asked Dr Y for his professional opinion, which was that William should be left to sleep.

William's parents went to bed at around 10.30 pm and observed that William was sleeping. There was constant video surveillance on William throughout the night. Dad recalls noting William moving about at around 5am.

At around 8.30am the next day, Mum discovered William was not breathing and phoned 999. South Western Ambulance subsequently attended and William was pronounced dead at approximately 8.47 am.

11. Findings and Analysis.

11.1 Main Purpose

The main purpose of this investigation is to explore all the events leading up to William's death and to understand at what point in William's illness might there have been an opportunity to recognise and treat the underlying condition that resulted in his untimely and tragic death. Through the course of this analysis, other factors (problems) may be identified that did not specifically impact on the outcome but that are noted as areas for improvement or learning. The details and background of this investigation have been reviewed by a multi-agency panel representing the relevant healthcare organisations. The panel has developed the discussion, analysis and findings that form part of the final conclusions and will inform recommendations and an action plan.

11.2 Persistent Cough

The persistent cough that William had in the weeks leading up to his death is particularly common in children from around 9 months to a year, and particularly around the time they begin to attend nursery.

Despite the common nature of the symptoms, the records show that in November William was presenting with symptoms of persistent coughing and vomiting, with green phlegm being produced over the last 6-8 weeks. There were a number of opportunities in this period to treat the infection and possibly to prevent the development of the pneumonia. This was discussed in detail at the inquest.

The panel also concluded that there were opportunities for primary care to consider the history and recurrent attendances of William to them as a trigger for referral for further investigation or treatment i.e. referral to a paediatrician, a CXR and / or prescription of further antibiotics.

The general practitioners on the panel considered that those involved in the primary care response did not fully consider the attendances of William and that had they done so they might have identified that the pattern required further referral, as described in the paragraph above. Specifically, the following attendances are considered as material in requiring primary care to take more- active interventions:

- 13th October attendance at the surgery
- 12th November attendance at the surgery
- 21st November attendance at the surgery.

The prescription of inhalers on the 12th November was not in the panel's opinion appropriate for a child of William's age. Nevertheless, having been prescribed, it should have resulted in a follow-up of progress etc; this did not happen.

11.3 Childhood Vaccinations

Mum asked if the vaccinations given to William on the 8th December could have compromised William's immune system.

During giving his evidence at the inquest, Professor Fleming said that the evidence was in fact the other way around, in that in the period immediately after the injection the immune system was stronger and other infections were slightly less likely to progress. The reason that vaccines are not given to people who are unwell is because they can mask or confuse what is actually happening with them, not because there is an increased risk of an infection getting worse or being contracted. The vaccines given are not 'live', so this is not an immunisation that in itself could cause a serious illness.

11.4 GP Appointment Friday 12 December

During the inquest, expert witness Professor Fleming advised that the type of streptococcus that was identified at post mortem was an invasive and rapidly-progressing infection. It was most likely that William's illness was developing a few days before his death. Therefore the episodes and sequence of events in the 24-48 hours before William's death were crucial.

When Dr Z examined William on Friday 12th December, he did not consider William to be critically ill and requiring a hospital referral. Dr Z was concerned about his high temperature but did not identify any other signs which would trigger a hospital referral. He did not record the temperature and he did not take the heart rate.

There are NICE guidelines (CG160) which advise GPs about feverish illness in children. These are designed to help the GP assess children with febrile illness, and the presence or absence of symptoms and signs which can be used to predict the risk of serious illness using a traffic light system. In this case, the GP did not record the temperature on the records, although he did take the temperature and both he and Mr Mead recall it being 40C. Dr Z did not take William's heartrate when listening to the chest. The respiratory rate and capillary refill time were noted. The symptoms and signs of specific illness are listed in the NICE guidelines; they include pneumonia. None of these signs were identified. It is likely that the heart rate would have been elevated but this would, if it had been recorded and the case, have resulted in amber flag.

The panel notes that recent NICE guidelines for sepsis have been issued for consultation (due to be published July 2016). If these had been applied to this case and the heart rate had met the appropriate threshold this would have resulted in a red, not amber flag.

At the time of the consultation Dr Z did not therefore identify any symptoms or signs which would directly indicate to him that William was in a high-risk group for serious illness. What he identified were intermediate risk features.

However, it is the conclusion of the panel that Dr Z should have referred William to hospital at that point, as the expert witness has pointed out that the pneumonia would have been present at that time.

The history was that William had had 3 significant attendances to primary care between 13th October and 21st November, in addition to the attendance on the 12th December and this was discussed at the inquest. The Panel discussed at when these attendances should have warranted consideration of antibiotics, referral to a paediatrician or A&E and / or for a CXR. The Panel postulated that the use of antibiotics at the earlier appointments may have prevented the pneumonia.

Reference is made to safety-netting advice given to William's father in the GP notes. There were no specific indicators given to the parents about what constituted 'worsening of symptoms', and no written advice. Whilst this is common practice in primary care, it is an area that the panel identified as requiring improvement. It is considered that parents require much more specific advice and information as to what constitutes a deterioration and which triggers should lead them to seek further urgent medical advice and review.

The panel also considered the fact that 12th December was a Friday evening and that any safety-netting advice given prior to a weekend should be 'enhanced', in that the normal weekday NHS services will not be accessible over a weekend.

11.5 Call to NHS 111

On Saturday 13th December, a call was made by mum to NHS 111. The call handler ran through the NHS algorithm and did not identify a seriously-ill child. A review of the telephone recording did not identify any serious failings in decisions made by the call handler, but there were opportunities to have explored William's condition further. These missed opportunities do not in themselves constitute a serious failure, but in hindsight the following elements have been identified by SWASFT as learning points and missed opportunities:

Breathing – the question asked was, 'Is he fighting for every breath?' The caller answered 'no', but went on to state he had an inhaler and his breathing was 'slightly more labored but not fighting'. The caller further offered that the patient had been coughing for 2-3 weeks. The Call Advisor did not sufficiently probe around these points in order to gain further information. There is a potential missed opportunity to have gained information which might have resulted in a higher-acuity response through the identification of a complex case.

Floppy / limp – the question was asked, 'Is he limp or floppy?'. The caller stated that the patient was not floppy; however, he was limp and if you picked up his arm it just flopped down. This information was not probed further, nor was the caller given the opportunity to expand their answer. There is a potential missed opportunity here to pick up on important information that could have resulted in a higher-acuity response.

Abdominal pain – Pathways do not routinely use the abdominal pain pathway for children, as they are often unable to verbalise and describe their pain. During module zero (the first module for 111 services) the call advisors are trained to probe around the information given by the caller in order to select the correct pathway. In this case, the Call Advisor chose 'vomiting' as this was the primary symptom described.

In summing up the information given during module zero' the Call Advisor states, 'He is unwell, he is vomiting, he is in severe pain, he has been like this for 1 ½ days'.

Having listened to the call, at no point did the caller state the patient was in severe pain; this was entered into the notes by the Call Advisor and was an interpretation of the information given. Within the vomiting pathway, abdominal pain is questioned and so the Call Advisor re-visited the question of abdominal pain. At this point there is no mention of severe pain and the caller does not give a positive answer to pain, so the Call Advisor selected 'No', which generated a 6- hour disposition. Had a 'Not sure' been recorded, this would have directed the Call Advisor down the same route as answering 'No'. Given the way the questions were answered, a selection of 'No' or 'Not sure' was appropriate. However, there is an expectation that the Call Advisor looks to and considers the notes in module zero and also considers the answers around crying.

With a child this age, crying could indicate pain (although the source may not have been clear) and therefore a positive selection around the question may have been deemed correct. A positive answer would have changed the disposition to a 'Primary Care within 2 hours'.

Temperature – the caller described that William had had a temperature for the last 1 ½ days that had required liquid paracetamol in order to keep it down. It was noted that at the point of the call the temperature was lower than expected. Pathways in 111 services are not sensitive to a drop in temperature from high to low, which would be a red flag for a sepsis-type infection. In addition, the question in pathways around fever for 3 days or more, or has come back after 3 days, would not have elicited a positive answer as the patient's temperature was described as being present for 1 ½ days.

Head injury - There was a difference in opinion between the reviewers as to whether the vomiting or head injury should have been assessed, as William had had a head injury within the preceding week. If the vomiting pathway had still been used but a positive answer given to the question about a head injury within the preceding week, the outcome of the call would have ranged from an emergency ambulance to a 'Speak to Primary Care Service within 6 hours' disposition, depending on the answers given. It is the Investigating Officer's opinion that, based on the information within the call, the disposition would have remained as 'Primary Care Service within 6 hours'.

A complex call - The caller provided a symptom history and recent medical history, which contain a variety of points to be considered, some which clearly have greater immediate relevance than others. With this information, it would have been appropriate for the Call Advisor to recognise that this should have been identified as a 'complex call'. As such the Call Advisor should have sought additional support from a 111 clinician who may have given advice to the Call Advisor or spoken directly to the caller themselves.

Crying child - NHS Pathways has a question: 'Has the child been crying for longer than 1 hour'. In answering this question, the caller indicated that the patient had been crying for 45 minutes but had now calmed down. It is recognized that there is the potential for two routes here, the caller implied in their answer that the patient was now calmer and this would have provided reassurance to the Call Advisor that the patient was now more settled.

The selection of a 'No' answer is therefore acceptable. If the Call Advisor had probed more around the further information offer by the caller that 'he is just staring into space', a different route might have been selected. This might indicate abnormal behaviour, therefore clinician advice might have been sought. In line with NHS Pathways, a 'No' selection was appropriate.

Throughout the call, William can be heard crying in the background. The Call Advisor is not clinically trained and it is possible that, had they been a clinician, they might have picked up background noise of William crying as a child in distress. That might in turn have given rise to further investigation or escalation. The algorithm did not cover this aspect.

The resulting disposition for William was 'Primary care 6 hours'. It is recognised that there was the potential during the telephone triage to have probed further around certain questions.

Furthermore, had the Call Advisor referred to the information gathered and entered onto the system in module zero, this might have resulted in a 'Primary care 2 hour' disposition. It is, however, difficult to determine precisely whether the OOH telephone call would have been made within the 2-hour time frame if passed as such. It can only be surmised that if a 2- hour disposition had been applied and fulfilled, the OOH GP would have heard William crying and concluded that an urgent referral to hospital was required.

11.6 Saturday 13 December – Telephone consultation with out-of-hours GP

The OOH GP Dr Y did not have access to the primary care records and was not therefore in a position to have all the information to hand - in particular the record of attendances from mid-October and the detail of the attendance at surgery the previous day.

Dr Y discussed William's condition with Mum and asked if she would like to bring him to the Falmouth Clinic. By this time, William had gone to bed and he seemed peaceful. Mum asked Dr Y for his professional opinion, which was that William should be left to sleep.

The significance of the large drop in temperature was not recognised. However, it is the view of the panel that many GPs would not be aware of this significant sign.

As this was a telephone consultation, Dr Y was unable to see William and had not had the opportunity to hear any abnormal cry or noises present in the earlier call to 111. Had he been seen, it is possible that Dr Y would have picked up the severity of William's illness. On terminating the call, the GP advised Mum to continue with the paracetamol and fluids, but if worried about him over the next 12 to 24 hours to ring back for a reassessment.

12. Problem Identification and Contributory Factor Analysis

The next stage in the investigation is to list any *care or service delivery problems* identified throughout the course of the review and analysis, and to drill down using a 'why' approach to identify and understand the contributory factors.

Contributory factors can have a positive as well as negative impact on the outcome. It is the key or most-influencing contributory factors that lead to root causes. The panel have identified a number of crucial opportunities where William's condition might have been identified and different action taken.

The opinion of the panel is that the individuals involved in the care and treatment of William between September and December 2014 did not intentionally take action or omit to take actions which would be to the detriment of William's welfare.

12.1 Primary care attendances from 13th October to 12th December Problems and Contributory Factors Identified

12.1.1 Staff Factors

The various GPs who saw William on 13th October and on 12th & 21st November considered that they were dealing with a viral infection which should settle without intervention.

The panel notes that the family believes that the infection was building up from November and that the GPs were not looking at the whole picture of attendance and their frequency. This is commonly known as a 'pattern of recognition' which raises a clinician's index of suspicion. Had they looked at this this they might have identified that the nature of Williams's condition had changed. The green phlegm should have indicated the need to consider antibiotics and a possible referral for a chest x-ray.

Dr X prescribed inhalers on 12th November. These were not necessarily appropriate to prescribe for a child of his age, and this prescription and William's response were not followed up. It would normally have been expected for the parents to be asked to return a couple of weeks later so that the response to the prescription could be assessed and his condition reviewed.

12.1.2 Task & Environmental Factors

The various GPs who saw William on 13th October and on 12th & 21st November did not prescribe antibiotics. The panel considered whether pressure on GPs not to prescribe antibiotics might be a factor although the GPs did not cite this as an explicit issue in this case.

The panel were also aware that anecdotally GPs are reporting the pressure they feel not to refer to acute providers or A&E unless absolutely necessary, which may have been a contextual pressure on the GPs involved. The panel again had no direct evidence of that as an issue in this case.

12.2 GP consultation on Friday afternoon, 12 December 2014 Problems and Contributory Factors Identified

12.2.1 Staff Factors

Dr Z looked at the capillary refill time, which is a very important marker of whether circulation is impaired, and found it to be normal. However, he did not take William's heart rate or record his temperature.

12.2.2 Task/Environmental Factors

Dr Z gave safety-netting advice, but this is often unspecific and the exact nature of this could be improved.

This was a Friday afternoon. The GP should be aware that cover at the weekend will result in a loss of continuity, and due consideration should have been made to this in the decision not to refer.

12.3 South Western Ambulance Service NHS Foundation Trust Problems and Contributory Factors Identified

12.3.1 Call Advisor probing skills

NHS Pathways is a structured triage tool which provides Call Advisors with a formalised script to follow when interrogating callers. During training, call advisors are instructed not to deviate from the questions, though it is important that they also appreciate the need to probe further in order to fully explore and quantify the answers given. Whilst this is taught during training, more recently additional probing training has been given. Insufficient probing occurred during this call.

12.3.2 Recognition of a complex call

As described above, the fact that a number of unrelated points involving symptom history and recent medical history were described by the caller should have resulted in the Call Advisor considering this a complex call and seeking clinical support.

12.3.3 NHS Pathways sensitivity

The NHS Pathways tool used nationally by all NHS111 service providers has limited sensitivity to red flags relating to sepsis. Patients that experience minority symptoms might therefore not be identified when using this triage tool. In particular, subtle changes seen in a deteriorating paediatric patient are not easily identified through the structured questioning within the pathways.

12.3.4 Patient factors

The patient was a 12-month-old child with rapidly-deteriorating illness. Children compensate for systemic shock but then rapidly deteriorate. William was not showing all of the classic red flags for sepsis.

12.3.5 Individual staff factors

The Call Advisor did not probe enough around some of the answers given.

12.3.6 Task Factors

'Pathways' is not sensitive through its initial triage to the sepsis red flag of temperature changes (high to low).

Therefore the Pathways assessment conducted by a Call Advisor would not have identified sepsis flags in relation to this case. The UK Sepsis Trust identifies hypothermia as a potential cause for concern in a patient when accompanied by another significant symptom.

12.3.7 Organisational /Strategic factors

Nationally there is no standard practice to specify how NHS111 and the local GP out-of-hours services interact with regards to how the NHS111 dispositions are mapped to out-of-hours provision. In some areas, NHS111 services can directly book callers/patients into treatment centre appointments, enabling a confirmed face-to-face appointment within the allocated timescale, whereas in other areas all NHS111 calls undergo further enhanced triage by the out-of-hours provider before receiving such a booking.

12.4 Telephone consultation with Dr Y – OOH Problems and Contributory Factors Identified

12.4.1 Staff Factors

The out-of-hours GP called back at 6.52pm, by which time William had been put to bed and was asleep. This was the second time in 24 hours that Mum had spoken to a GP. The index of suspicion for the GP might have been raised, triggering a referral to a paediatrician or for him to see William himself.

Any safety-netting advice needs to be clear and specific, outlining what a parent should do if or when a child's condition changes or worsens. The OOH GP gave instruction to call back later if the parents were worried. Safety-netting advice is not specific enough to highlight what the parents should be looking for.

12.4.2 Patient factors

By the time of the call-back by the OOH GP, William had gone to bed and seemed comfortable. The symptoms described over the phone did not indicate a seriously-ill child; this is considered to be what most GPs would conclude. The significant drop in temperature was not recognised as a key indicator of William's rapidly deteriorating condition.

12.4.3 Task & Environmental Factors

There is no system for various clinicians in the urgent care system to see the primary care records of a patient. The OOH doctor could not therefore see the detail and nature of the attendances of William in primary care since October.

13. Conclusions.

Tragically, there a number of missed opportunities, identified in section 12, where a different course of action should have been taken. Although the panel concluded that these did not constitute direct serious failings by the individuals involved, had any of these different courses of action been taken, William would probably have survived.

The evidence is very clear that septicaemia or blood-poisoning is a very rapidly developing condition where the body's response to an infection goes wrong and begins to attack the tissues and organs.

Whilst it is rapid, there is always an underlying pathology or infection which provides the environment for the septicaemia to develop. In William's case, this underlying pathology was the pneumonia, empyema / pleural effusion and abscess in his left lung, identified at post-mortem and the inquest. As a result of this the streptococcal infection took hold, septicaemia.

A significant missed opportunity was the fact that the underlying pathology, a chest infection and the pneumonia was not recognised and treated. The panel considered whether the GPs failed to recognise the whole picture and presentation of a child who had attended frequently, and in particular were not necessarily listening to the parents who are the ones best placed to identify concerns and symptoms. There were repeated attendances with primary care between September and December 2014 which does not appear to have raised the index of suspicion of the GPs and a pattern of recognition. The panel notes that the relevance of this was considered at inquest.

Within this the panel considers that the prescription of an inhaler should have been followed up by the GP to consider the impact and response, but it wasn't. The panel considers that it is not possible to diagnose asthma in a child of this age. Whilst it has been noted subsequently that this was probably the wrong prescription for a child of William's age, this was not material to the outcome in the opinion of the panel.

There were missed opportunities on Friday 12th and Saturday 13th for services to refer William urgently to hospital. The expert opinion at the inquest (Professor Peter Fleming) was clear that had they done that, even at that late stage, 'there was a very good chance' that William would have survived.

There were record-keeping omissions on 12th December 2014 when the GP took William's temperature, and subsequently agreed with William's father that this was high, but did not record it. The panel considers that this in itself was not material to the outcome. Of more significance was not taking William's heart rate during the consultation on 12th December. It is not possible with hindsight to say if the heart rate would have been raised, but the post-mortem and inquest concluded that at this time the infection would have been established and empyema would have been present, so it is likely that the heart rate would have been raised. If this had been the case and it had been taken, the conclusion of the GP would have been amber risk of serious illness (according to NICE guidelines at the time).

The panel considers that the safety-netting advice given by both the GP practice and the OOH service was the standard of advice normally given by primary care; this was inadequate and consideration needs to be given as to how this could be improved.

Parents require much more specific advice as to what constitutes a deterioration etc, and specific circumstances and conditions described to them as to when they should urgently refer back to primary care or A&E. In this case, the safety-netting advice was vague and non-specific. In addition the panel have concluded that when such advice is being given on a Friday, with access to medical support more limited over the coming weekend, the safety-netting advice should be enhanced.

It is clear that in this case, primary care were working to the general standard of advice and guidelines available regarding sepsis, but that the awareness of sepsis in children is still limited in primary care. The UK Sepsis Trust states that 10,000 children nationally in the UK are affected by sepsis.

Whilst it is recognised that statistically this means that few if any cases would be seen each year by an individual GP, this is all the more reason for GPs to have much clearer guidance and information on the identification of sepsis. This would include information on the significance of a rapid and dramatic drop in temperature, which was an indication of rapid deterioration and a seriously-ill child on 13th December.

For the 111 service it has been stated that the Call Advisor was working as instructed to a clear script of questions and that they are trained to not deviate from this. The conclusion of SWASFT, as part of this panel, is that its call advisors need to be trained to appreciate when there is a need to probe further, how to recognise a complex call and when to call in clinical advice earlier.

Many of the conclusions of the panel are far-reaching, with national implications.

GPs in this investigation did not cite pressure to reduce anti biotic prescribing or referrals to A+E as an explicit issue in this case, but the panel did discuss this issue. As is the case for all child deaths, the Child Death Overview Panel (CDOP) has reviewed William's death and they did so from a public health and overall population-based approach. In relation to the perceived pressure on GPs not to prescribe antibiotics, the view of the panel is that the CDOP process would be a route to identifying whether this is indeed the case.

In a national context, the third issue identified is that the NHS 111 Pathways tool used by all 111 providers has limited sensitivity to red flags relating to sepsis and to subtle changes in a deteriorating paediatric patient. The significance of a rapid drop in temperature is also not a factor recognised in the pathway. In this context, the panel noted that there is not a standard practice nationally as to how 111 services and local OOH services interact in regard to dispositions. The panel concluded that if the disposition in this case had been 2 hours rather than 6 hours, and the call made to Mum by the OOH GP within 2 hours, the GP would have heard William crying in the background and probably recognised his cries as a child in distress and requiring urgent medical attention.

Finally for national consideration is the ongoing challenge of shared patient records. The panel concluded that if the OOH GP had had access to the primary care records and details of the attendances of William over the previous weeks, he might well have decided to insist on seeing William on the Saturday.

A final conclusion, which is not related to William's case per se but nevertheless of relevance, is that the panel have concluded that if William's parents had not been involved as openly and fully as described in section 8, the full extent of the contributory factors and learning would not have been identified. The panel will ensure that this 'RCA process' learning is applied to future cases in the South West.

14. Recommendations.

In response to the findings and conclusions of this RCA, the recommendations are in three categories: for national consideration; for SW consideration; and for local provider consideration.

14.1 National Recommendations

- a) That NHS England SSW escalates to national bodies the issues relating to the pressure on primary care in relation to: antibiotic prescribing; referrals to secondary care; and workload.
- b) That NHS England South escalates the issues regarding the sensitivity of NHS 111 Pathways.
- c) That NHS England South escalates the issues regarding the need for more defined standards regarding how 111 services and local OOH services interact in regard to dispositions.
- d) That NHS England South escalates the importance of progressing the information / record-sharing agenda for all NHS bodies.
- e) That NHS England Medical Director Office and the UK Sepsis Trust work actively together, with the input of experts and parents in the SW, on the development of national guidance to parents and GPs regarding childhood sepsis, using the SW as the initial pilot site.

14.2 SW England Recommendations

- a) That NHS England identifies existing initiatives such as Care Connect in the SW that will enhance the sharing of patient records and information, and subsequently produces a programme of development for the SW.
- b) That a SW initiative is developed urgently for the dissemination of information to parents and GPs on sepsis recognition as a pilot for the national work as per 14.1[e] above.
- c) That a SW initiative is developed for best practice in primary care on safety-netting advice.
- d) That the SW develops existing plans for referral to assess models of care between primary and secondary care.
- e) That SWASFT instigates a plan to train call advisors in probing questions, recognition of complex calls and referrals to clinicians.
- f) That NHS England approaches the CDOP SW to discuss how many cases have been identified involving deaths and the possible reluctance of GPs to prescribe antibiotics.

14.3 Local Recommendations

- a) That SWASFT produces an action plan for monitoring.
- b) That the actions already been taken by the Practice are reviewed to provide assurance that all that should be done from the learning, has been done.
- c) That the RCA process and how relatives are involved is reviewed and improved as a result of the positive learning from this case.

15. Action Plan.

The action plan resulting from this RCA will be on the 3 levels identified in section 14:

- I. National
- II. SW
- III. Local.

The action plan will include the following:

- The action required
- Who is responsible
- By when
- Completion date
- What assurance on impact and outcome is expected
- Monitoring of above.

The action plan will be owned and overseen by NHS England SSW. It will be monitored via the following assurance mechanisms:

- Kernow CCG assurance meetings for their actions and their providers (SWASFT, primary care and OOH)
- All 7 SW CCGs' assurance meetings to ensure implementation of the SW actions.

An oversight group involving William's parents will be established, reinforcing transparency and openness.