



**Independent investigation into the death of  
Coco Bradford**

**Final Report**

**September 2018**

## Document Information

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## Acknowledgements

Facere Melius would like to thank all of those who made themselves available to be interviewed, some on several occasions.

## Section 1: Executive Summary

### Purpose of the investigation

Coco Bradford (aged 6) was admitted to the emergency department of the Royal Cornwall Hospitals Trust (RCHT) on 25 July 2017 exhibiting a variety of symptoms including vomiting, bloody loose stools, and inability to tolerate fluids. Coco was discharged home but returned to RCHT the following day (26 July) and was admitted to the paediatric ward, Polkerris ward. On 28 July she was transferred to RCHT adult Intensive Care Unit before onward transfer to Bristol Royal Hospital for Children for paediatric intensive care. Unfortunately, she failed to respond and died there on 31 July 2017.

Coco's parents raised questions and expressions of concern around the clinical decision-making processes and treatment provided to their daughter whilst in the care of RCHT. In February 2018, the trust's medical director formally commissioned Facere Melius, a healthcare consultancy, to undertake an independent investigation with reference to NHS England's Serious Incident Framework. Investigations under the framework are designed to support learning and prevent recurrence.

### Summary: main findings of the investigation

The investigation found that there were a number of missed opportunities throughout Coco's care and treatment at RCHT. The investigation team concluded that there were key points when, if her clinical management plan had been altered, the outcome for Coco could have been different. These included but are not limited to:

- It was not recognised that she was clinically dehydrated and in clinical shock on arrival at RCHT emergency department on 26 July
- Her clinical dehydration and clinical shock were not treated appropriately throughout the period she was on Polkerris Ward

- An inadequate fluid management plan was implemented which did not follow NICE guidance or RCHT paediatric departmental guidance on fluid management
- Abnormal blood and gas results were not identified and acted upon to build a clinical picture and inform her diagnosis and treatment plan
- On several occasions there was a lack of a thorough review of her most up to date clinical observations, examination findings and blood results to inform her treatment plan
- Her blood pressure was not obtained until Friday 28 July at 00.15, some 36 hours after her admission to hospital
- There was delay in starting antibiotics overnight on 27/28 July when her clinical picture suggested she had developed disseminated bacterial sepsis

As per the terms of reference of the investigation, the team also reviewed the trust's compliance with and management of its internal serious incident process, duty of candour and engagement with Coco's parents following her death. The investigation found:

- The trust's serious incident process should be strengthened, particularly concerning how 72-hour reviews are conducted
- The duty of candour was initiated by the medical director as soon as information became available suggesting that something may have gone wrong
- The trust's approach to learning from mortality in paediatric care has been open and honest
- The complaint made by Mr and Mrs Bradford was not well managed and the trust's communication with them on how their allegations and concerns were to be investigated was not clear and at times lacked compassion and sensitivity

- This included the absence within the trust of single leadership and coordination with her parents, which led to contradictory information and confusion about what was happening.

## Key Recommendations

1. The trust should urgently review the existing paediatric escalation policy and ensure that it demonstrates the ability to respond to capacity/demand issues, and takes account of patient acuity and clinical staffing levels. This should include definitive actions to be taken when the paediatric service are experiencing operational pressures, i.e. triage, stabilise and transfer
2. The trust should review the overnight paediatric staffing levels to ensure that there are safe staff-to-patient ratios in place.
3. The paediatric service should immediately review their use of clinical guidelines and ensure that they have a full suite of up-to-date guidance that is also implemented into daily clinical practice.
4. The trust should urgently agree a policy for the care of children on ICU that is in line with the Paediatric Intensive Care Society guidelines.
5. The trust should undertake a review of the current PEWS system to ensure that it provides an accurate impression of the patient status.
6. The trust should consider the introduction of patient observation charts, which default to a cumulative or “trend” view to enable clinical oversight.
7. The trust should ensure that all staff involved in the care of a patient should follow professional standards in relation to the documentation of clinical records.

8. It is recommended that the trust undertake an internal retrospective review of paediatric mortality data to assure themselves that all paediatric deaths have been reviewed appropriately in line with the NHS Serious Incident Framework guidance, 2015.
  
9. The trust should fully implement The National Quality Board Learning from Deaths: Guidance for NHS trusts on working with bereaved families and carers, July 2018 – see references.

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## Section 3: Introduction

- 3.1 Coco Bradford (aged 6) was admitted to the emergency department of the Royal Cornwall Hospitals Trust (RCHT) on 25 July 2017 exhibiting a variety of symptoms including vomiting, bloody loose stools, and inability to tolerate fluids. Coco was discharged home but returned to RCHT the following day (26 July) and was admitted to the paediatric ward, Polkerris ward. On 28 July, she was transferred to RCHT adult Intensive Care Unit before onward transfer to Bristol Royal Hospital for Children for paediatric intensive care. Unfortunately, she failed to respond and died there on 31 July 2017.
- 3.2 Coco's parents raised questions and expressions of concern around the clinical decision-making processes and treatment provided to their daughter whilst in the care of RCHT. The trust's medical director decided that there should be an independent investigation into all the circumstances surrounding the death of Coco.
- 3.3 In February 2018, the trust's medical director formally commissioned Facere Melius, a healthcare consultancy, to undertake an independent investigation with reference to NHS England's Serious Incident Framework (the framework) published in March 2015 [appendix 3: Independent Investigation (level 3) - see references]. Investigations under the framework are designed to support learning and prevent recurrence.



## Section 4: Condolences

The investigation team would like to express their condolences to Coco's parents and family and to thank them for meeting with the investigation officers to share their story of Coco's time in hospital in July 2017 and the subsequent events. Coco was clearly a very much-loved child and her death has had a devastating effect on her family.

## Section 5: Investigation process and methodology

### 5.1: Independent investigation (level 3)

This investigation has been undertaken under the NHS framework. Investigations under this framework are designed to support learning and prevent recurrence as follows:

*'Investigations carried out under this framework are conducted for the purposes of learning to prevent recurrence. They are not inquiries into how the person died, as this is a matter for the coroner. Neither are they conducted to hold any individual or organisation to account. Other processes exist for this purpose including criminal or civil proceedings, disciplinary procedures, employment law and systems of service and professional regulation.... In circumstances where the actions of other agencies are required then those agencies must be appropriately informed and relevant protocols outside of this framework must be followed.'*

(NHS serious incident framework, p.60 – see references)

The framework also states that *'it is fundamental that the patients/service users and/or family/carers are involved from the very beginning of the process and that their needs are assessed to ensure they are appropriately supported....'*

(NHS serious incident framework, p.63)

### 5.2: Terms of reference

Terms of reference were agreed at the onset of the investigation and shared with Coco's parents and other stakeholders. They are attached as appendix 1.

### 5.3: Investigation team

The investigation team comprised:

- Darren Thorne, Managing Director, Facere Melius
- Geraldine Lavery, Senior Associate, Facere Melius
- Dr Jayne Clarke, Consultant Paediatrician, Associate Medical Director and Clinical Director, clinical expert
- Anil Garcia, Investigating Officer, nurse lead, Facere Melius Associate
- Liz Cosford, Investigating Officer, Facere Melius Associate
- Aleksandra Stasiak provided administration and project support

An independent clinical expert provided additional support to the investigation team:

- Dr Susan Gilby, Medical Director, professional advisor
- Law by Design Limited provided legal advice

The team's profiles can be found in appendix 2.

### 5.4: Methodology

5.4.1 The team applied root cause analysis methodology and used a range of both quantitative and qualitative techniques to undertake the investigation. These included:

- A review of all medical and clinical information relating to Coco from RCHT, Bristol Royal Hospital for Children (BRHC) part of University Hospitals Bristol NHS Foundation Trust, South West Ambulance NHS Foundation NHS Trust (SWAFT) and Welsh and West Acute Transfer for Children (WATCH)

- Minutes and notes from internal meetings, multi-disciplinary meetings, mortality review meetings, and the BRHC internal mortality review (child death review) process
- National and local policies, guidelines and procedures
- Correspondence between the trust and Coco's parents
- Management of the trust's internal serious incident and complaints procedures and compliance with duty of candour

A list of documents that were provided is recorded in appendix 3.

5.4.2 The investigation team met with Coco's parents and members of her family in April 2018, and again with her parents in May 2018. The purpose of these meetings was to understand their view of events, their concerns regarding the clinical decision-making and treatment during Coco's time in hospital at RCHT, and to understand how the trust engaged with them and addressed their questions and concerns following Coco's death.

5.4.3 Throughout May and early June 2018 interviews took place with 30 members of staff from RCHT who were involved in Coco's care, had a clinical leadership role in the trust, or were involved in the management of the clinical governance systems and processes. The majority of these interviews were conducted face to face, with a few held via telephone. A chosen colleague supported some of those being interviewed. Some individuals provided additional documents in the form of emails, personal notes or other relevant documentation. A précis of the key points from the face-to-face interviews was sent to each person for confirmation. There were also two telephone interviews that took place with South West Ambulance NHS Foundation Trust (SWAFT). Two telephone interviews were held with

clinicians from Bristol Royal Hospital for Children (BRHC). A further interview was held face to face.

5.4.4 Further follow up meetings and telephone consultations took place in July and August 2018.

5.4.5 The team would like to express their appreciation to all of those who engaged in the process and gave their time to meet or to speak with them.

5.4.6 Following the document review and interviews the team verified the chronology of events and identified key themes and findings. These were rigorously analysed, assimilated, fact checked and verified. Where possible information was checked against other sources for reliability (triangulation) prior to drafting the report ready for quality assurance and legal review.

5.4.7 Throughout the report names of staff involved in Coco's care have been anonymised. The following references have been used in the report:

- Doctors – Dr plus capital letter A, B, C, D, etc
- RCHT nursing team- nurse plus numerical reference; healthcare assistant – HC plus a numerical reference
- SWAST paramedics – paramedic plus a numerical reference

## Section 6: Context

- 6.1 The Royal Cornwall Hospitals Trust is the main provider of acute and specialist healthcare in Cornwall and the Isles of Scilly. It serves a registered population of around 480,000 people, a figure that can increase significantly during the summer months. The trust employs approximately 5,000 staff and has a budget of approximately £380 million. There are three hospital sites: Royal Cornwall Hospital (Treliske) in Truro, West Cornwall Hospital in Penzance and St Michael's Hospital in Hayle. The trust has approximately 750 beds. The emergency department is based at the Royal Cornwall Hospital in Truro.
- 6.2 Paediatric services are provided at the Royal Cornwall Hospital in Truro. There are three dedicated children's wards, one of which provides day services and a three-bedded high dependency unit. Coco was admitted to Polkerris Ward, a specialist children's ward for those aged 0 -11. There are 12 beds, including eight side rooms. The paediatric high dependency unit is a dedicated three-bedded area situated on Polkerris ward. This is where children who are seriously ill and require close observation and monitoring are looked after.
- 6.3 Plymouth and Exeter are the nearest hospital locations that also provide acute paediatric hospital services, 55 and 90 miles away respectively. Bristol Royal Hospital for Children is the nearest specialist service for children and is approximately 170 miles from Truro.
- 6.4 Cornwall NHS 111 service is part of the integrated Urgent Care Service (111 IUCS) managed by Kernow Health Community Interest Company in partnership with RCHT and Vocare. The NHS 111 service provides a 24-hour, seven-day-a-week telephone service, which assesses patients'

symptoms in order to direct callers to the most appropriate medical care for their needs.

6.5 South West Ambulance NHS Foundation Trust (SWAFT) provides emergency (999) ambulance services across the South West, which includes Cornwall and the Isles of Scilly.

6.6 The Care Quality Commission (CQC) carried out a comprehensive inspection of RCHT in January 2016. The trust was rated as requires improvement overall. An unannounced focussed inspection took place in January 2017. As this inspection focussed on specific areas only a new rating was not assigned. In July 2017 a further announced focus inspection took place. The quality report from this inspection was published in October 2017 and rated the trust overall as inadequate.

6.7 NHS England published an Operational Pressures Escalation Framework (OPEL) in 2016. The aim of this framework is to provide a consistent approach to organisations in times of pressure to ensure that quality and patient safety are maintained. There are four levels:

- Level 1 – the organisation operates within normal parameters
- Level 2 – the organisation starts to show signs of pressure
- Level 3 – the organisation experiences major pressures compromising patient flow
- Level 4 – pressures increase and organisations are left unable to deliver comprehensive care.

On the 25 and 26 July, RCHT were operating at OPEL 4 and on the 27 and 28 July, RCHT were operating at OPEL 3.

## Section 7: Background

- 7.1 Coco was born on 28 January 2011 to Luke and Rachel Bradford. Coco was formally diagnosed with autism in March 2015, when she was four years old. Her parents told the investigation team ‘she was a very happy and healthy child, resilient and strong and was rarely ill’ and never had an emergency admission to hospital. At the end of June 2017, Coco was in good health and she was due to go to mainstream school from September 2017.
- 7.2 In the afternoon Saturday 22 July 2017 the parents recall that she didn’t eat well; on 23 July she started vomiting and on 24 July she started having diarrhoea. In the early hours of 25 July parents called for an ambulance.



## Section 8: Chronology and analysis of key clinical events between 25 and 28 July 2017

Below is a summary of the key clinical events leading up to Coco's admission to the Royal Cornwall Hospitals Trust and during her time as a patient there, until the time of her transfer to Bristol Royal Hospital for Children on 28 July 2017. The more detailed clinical information can be found in the appendices [A + number refers to Appendix number and the subsequent code refers to the exact piece of information. A selection of clinical presentation (CP) is presented in this section; a full set of them can be found in Appendix 5]. The investigation team's commentary is in bold.

### 8.1: Tuesday 25 July 2017

- 8.1.1 Coco's father called the 111 service, describing her symptoms; the call was logged with Dorset 111 Service at 01.10. At 01.20 the 111 service manually requested an ambulance from South West Ambulance Foundation Trust. This call was classified as category 3 (urgent, target response time 120 minutes). Following this call Mr and Mrs Bradford expected an ambulance to be sent to their home.
- 8.1.2 At 02.53 Mr Bradford made a second call directly to 999 to enquire where the ambulance was. The operator confirmed an ambulance had been arranged and requested a review by their clinical supervisor (CSUP). Mr Bradford discussed Coco's symptoms with the CSUP, who upgraded the call to a category 2 (emergency but not life threatening, target response time 40 minutes).
- 8.1.3 At 04.06 Mr Bradford made a third call to 999 to stand down the ambulance, as Coco was asleep; Mr and Mrs Bradford would review the situation in the morning. The operator referred the request to the

CSUP who reviewed the case and agreed to stand the ambulance down. Mr Bradford was advised to call back if the situation deteriorated.

- 8.1.4 At 07.23 Mr Bradford made a fourth call to 999, telling the operator that they thought Coco 'has gastroenteritis', describing her symptoms, but also mentioning it was possible that she might have ingested rat poison that had been laid under the decking in the garden.
- 8.1.5 An emergency ambulance arrived at 07.40; her history of diarrhoea and blood in faeces was recorded and her observations taken (see A4, C8 & C9). Of these her capillary refill time (this is the time taken for colour to return to a fingertip or the sternum after pressure is applied) was potentially prolonged, recorded as between 2 to 5 seconds. This is usually a single value (e.g. 3 seconds) rather than a range so this measurement is difficult to interpret. This is a rapid circulatory assessment of ill children and is a 'red flag' indicator as per NICE pathway interactive flow chart for fluid and nutritional management in children with diarrhoea and vomiting [appendix 8].
- 8.1.6 Coco was taken by ambulance to the RCHT emergency department, arriving at 08.27. The hospital was on OPEL level 4 (see p.12).
- 8.1.7 On arrival at hospital Coco was seen by a paediatric nurse (1) and reviewed by a locum registrar Dr A. Due to Coco's parents' concerns that she may have eaten some of the rat poison that they had put in the garden, the National Poisons Information Service (Toxbase) was consulted. This advised that children are unlikely to take a significant amount and if they had this would be evidenced by clearly visible blue staining around the mouth.

- 8.1.8 Coco was given a fluid challenge; this is a means of assessing a patient's ability to tolerate oral fluids, and it is done by giving small amounts of fluid at regular intervals. This is normally recorded on an input-output chart, but such a chart was not found within her clinical records.
- 8.1.9 Dr A examined Coco and recorded in her notes that she was clinically dry, had normal observations and no fever. Her chest was clear and there were soft bowel sounds. He also recorded that Coco tolerated a fluid challenge – although this was not her mother's recollection: 'we were given a fluid balance sheet to fill in, but every time Coco had even 10mls it would come back up'.
- 8.1.10 Coco's blood pressure was not taken, her pain score wasn't assessed, nor was she weighed. Although blood in faeces was documented in her history taken by the ambulance crew, and evidenced in the recording of the 999 call, none of the staff who were involved in Coco's care recall seeing any evidence of blood in her faeces.
- 8.1.11 Dr A's plan was to discharge Coco with a diagnosis of gastroenteritis and provided verbal advice to the family to continue with the fluid challenge and to return if there were any further concerns. Coco was discharged at 12.30.

### Commentary

*During Coco's assessment in the emergency department no blood test or blood gas were taken. In a child presenting with loose bloody stools or the possible ingestion of rat poisoning, it is the opinion of the investigation team's clinical expert that blood samples should have been taken. This would have provided a profile of Coco's blood clotting and blood platelet levels, which may have indicated a bleeding problem. However, these were undertaken on the subsequent admission and were initially normal.*

*There was only one paediatric nurse based in the emergency department. There was poor recording of clinical information, and the doctor's entry was not dated or timed. There was no written evidence to support that nurse 1 had taken clinical observations or that the family had been provided with the fluid chart.*

*If Coco's clinical presentation had been assessed against the NICE guidance for the management of diarrhoea and vomiting in children (see A5, CP2) it would have led to her being categorised as having no clinically detectable dehydration. Although her observations were normal, the investigation team's clinical expert's opinion is that the history of profuse diarrhoea and bloody stools and the absence of evidence of her tolerating the fluid challenge would suggest she was at risk of becoming dehydrated if her symptoms continued. This should have led to a period of observation in hospital.*

## 8.2: Wednesday 26 July

- 8.2.1 Coco continued to be unwell overnight, with vomiting and bloody diarrhoea. Mrs Bradford called for an ambulance at 12.29, which arrived at 12.55. The paramedics assessed her; her history of bloody diarrhoea, raised heart rate, and high blood sugar was noted [A4 C17-19]. Although paramedic B could not remember seeing any blood in Coco's nappies, he does remember that her parents made him aware of this symptom. He remembers that Coco 'did not look well at all' and that she was 'doubly incontinent' which her parents said was unusual for her. She was taken to RCHT emergency department, arriving at 14.08. The hospital was still on OPEL level 4 (see p.12).
- 8.2.2 Three members of the nursing team in the emergency department saw Coco. She was triaged by nurse 2 and reviewed by healthcare assistant HC 1, who took her baseline observations, including her weight [A4

C25]. Healthcare assistant HC 1 remembered Coco being pale and agitated but was unsure whether the agitation was due to her acute illness, as people with diarrhoea and vomiting normally have pain, or whether it was due to her autism. She also remembers Mrs. Bradford describing Coco's nappies as being 'bloody' but does not recollect seeing them.

8.2.3 Paediatric nurse 8 also saw Coco and remembered her as being pale. However, she did not record this assessment. When questioned by the investigation team, she thought with hindsight Coco could have met the criteria of being clinically shocked.

8.2.4 It was difficult to ascertain from records which nurse cared for her during this time [see section 9.8]. However, through the interviews with the investigation team it became clear that HCA 1 was the main point of contact and recorder in the clinical records.

8.2.5 Dr B was the first doctor to see Coco in the emergency department; she was concerned by her clinical presentation of fresh red blood, watery stools, flecks of blood in vomit and that she had been doubly incontinent. She was also concerned by the account given by her parents of how she had been over the last 24 hours - not tolerating anything orally and now confused and hallucinating. This information triggered a 'red flag' for Dr B. The paediatric registrar Dr C happened to be in the department at the time (seeing other paediatric patients). As Dr B had previously worked with him, she escalated Coco directly to him and they reviewed Coco jointly. Normal practice is that an emergency department senior doctor would have reviewed Coco first.

## Commentary

*As Coco did not have a senior emergency department doctor review this was potentially a missed opportunity for appropriate intervention at an early stage. However, it was not possible to speculate or say with any degree of certainty what action would have been taken by the emergency department senior doctor. Nevertheless, Coco's presentation with clinical shock is unusual in her age group and emergency departments see more patients requiring fluid resuscitation than paediatric departments.*

8.2.6 Drs B & C jointly reviewed Coco at 16.30. Her clinical observations at this time (A4 C28) were abnormal, her heart rate and respiratory rate were above the normal range, her blood glucose was abnormally high (also noted in the ambulance records), and her blood pressure was recorded as unobtainable. On clinical examination Dr C found that she had dry mucous membranes; pallor; capillary refill time of three seconds centrally; sunken eyes; confused speech; hallucinating, and mottled skin.

At this time three diagnoses were considered:

1. Clinically dehydrated from gastroenteritis not tolerating oral fluids/food
2. Possible diabetic ketoacidosis
3. Gastrointestinal bleed associated with possible rat poison ingestion

8.2.7 The clinical management plan for Coco was to have intravenous (IV) access and blood tests (A7, B1 & B2). IV fluids to commence at 54ml/hr – this was a maintenance rate only (see appendix 9). A fluid bolus and antibiotics were considered at this point but were not prescribed.

8.2.8 The rationale for not giving a fluid bolus was the concern that Coco’s high blood sugar level could be due to diabetic ketoacidosis (DKA). To investigate this possibility a blood gas was taken. Antibiotics were not given, as they are not part of the routine treatment for gastroenteritis, particularly when there are symptoms suggesting E Coli infection such as the bloody diarrhoea (see section 9.3.6).

8.2.9 Additional information was available from the blood gas (A7,B2) including a high lactate reading, which is an indication of poor oxygen flow to the tissues, and may suggest a significant infection. The haemoglobin (Hb) result was high, which is an indication that the blood is concentrated possibly due to dehydration. Her ketone level was high also suggesting dehydration.

**Chart CP3**

Clinical Picture 26 July 1505			
Increasing severity of dehydration			
	No clinically detectable dehydration	Clinical dehydration	Clinical shock
<b>Symptoms (remote and face-to-face assessments)</b>	Appears well		Appears to be unwell or deteriorating
	Alert and responsive		Altered responsiveness (for example, irritable, lethargic)
	Normal urine output		Decreased urine output
	Skin colour unchanged		Skin colour unchanged
	Warm extremities		Warm extremities
<b>Signs (face-to-face assessments)</b>	Alert and responsive		Altered responsiveness (for example, irritable, lethargic)
	Skin colour unchanged		Skin colour unchanged
	Warm extremities		Warm extremities
	Eyes not sunken		Sunken eyes
	Moist mucous membranes (except after a drink)		Dry mucous membranes (except for 'mouth breather')
	Normal heart rate		Tachycardia
	Normal breathing pattern		Tachypnoea
	Normal peripheral pulses		Normal peripheral pulses
	Normal capillary refill time		Normal capillary refill time
	Normal skin turgor		Reduced skin turgor
	Normal blood pressure		Normal blood pressure

	No clinically detectable dehydration		Clinical dehydration		Clinical Shock
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8.2.10 Coco remained in a side room in the emergency department until she was transferred to Polkerris ward at 19.30.

### 8.3: Admission to Polkerris ward

8.3.1 A paediatric handover, which is the exchange of clinical information between teams, took place on Polkerris ward at 16.30 prior to Coco's arrival on the ward. Dr C joined this handover directly after reviewing Coco in the emergency department. This handover was led by consultant Dr D and attended by consultant Dr E. Dr C was concerned about Coco and reported her as 'one to watch' with a working diagnosis of gastroenteritis. Dr E remembered being told about Coco at handover and that she was a child who needed 'further assessment'. It was Dr D's opinion that Coco was unlikely to have DKA as the result from the blood gas did not support this diagnosis.

#### Commentary

*The investigation team's clinical expert agrees that the blood gas result (A7, B2) did not support the diagnosis of DKA as there was no evidence of acidosis and the blood sugar level was falling without DKA treatment. This therefore made the most likely diagnosis gastroenteritis.*

8.3.2 According to the nursing notes Coco was admitted to the ward at 19.30. The ward was described to the investigation team as busy. Due to her diarrhoea and vomiting she required isolation for infection control reasons and was admitted to a side room at the bottom of Polkerris ward. This room was away from the main thoroughfare of the ward (See the circle on the floor plan below). Although this room was referred to as a high dependency unit (HDU) side room it was not commissioned for this purpose. This meant that Coco was not treated



as a patient receiving or requiring high dependency care. Therefore, access to the electronic observational charts that provide an overall view of trends and pattern of results was not available in this room. Nor was there access to higher intensity nursing care and documentation.

### Floor plan of Polkerris Ward



8.3.3 Nurse 4 admitted Coco to the ward. She did one set of observations (18:34, A6, Ob1), but was unable to take her blood pressure. She told the investigation team she remembers Coco interacting well with her parents and her parents describing blood in her stools, but she didn't witness this as she was not involved in any nappy changes during her time caring for Coco. She described Coco as being physically upset and rolling around the bed. However, nursing observation did not include a pain assessment.

8.3.4 The nursing plan on admission (19.30) was to await the blood results, although blood tests had been taken at 15.38 and therefore the results

would have been available on the system. A repeat blood sugar test was performed; the result showed a reduction towards the normal range. This provided further confirmation that Coco did not have diabetes (DKA).

8.3.5 Coco's first medical review on the ward was at 22:00 when she was seen by the registrar, Dr P. The registrar, besides being responsible for Polkerris ward, was also providing cover to the other paediatric wards, including Fistral ward, paediatric HDU, paediatric observation unit and neonates (see section 9.2.1). The registrar told the investigation team that due to the acuity and capacity of Polkerris ward combined with a new junior doctor she was on shift with, she did not feel as well supported on the night shift as usual.

8.3.6 Dr P was concerned that Coco had not been reviewed since arrival on the ward and recalled that she was 'not a very well child'. Her assessment was recorded as:

- Likely gastroenteritis
- Blood in vomit + blood in stool
- Raised Glucose – No acidosis – High Lactate
- Neutrophilia

8.3.7 Dr P recorded in the medical records that Coco's eyes looked sunken, her hands and feet were cool, her capillary refill time was recorded as three seconds, in addition she also recorded that Coco was agitated and uncomfortable (A5, CP4; A6, Ob2 & Ob3; A7, B3).

8.3.8 Coco was described as dehydrated and a note was made to monitor her for haemolytic uraemic syndrome (HUS), which is a condition associated with E Coli 0157 gastroenteritis, caused by the abnormal destruction of red blood cells. The damaged red blood cells clog the

filtering system in the kidneys, which can lead to life-threatening kidney failure.

8.3.9 The intravenous infusion, which, had been started in the emergency department continued to run at the maintenance rate of 54ml/hr.

8.3.10 The plan from this 22.00 review was for Coco to have a fluid bolus, strict monitoring of her input/output; her blood tests to be repeated at 02.00, followed by a fluid review and monitoring of her blood glucose and blood pressure; she was to be reweighed in the morning. She received a 160ml fluid bolus over one hour. Dr P told the investigation team that she chose the fluid management plan as described above because 'I would rather do smaller ones because of concern of HUS'. [With HUS it is important not to fluid overload a patient].

## Commentary

*As before Coco was exhibiting clinical signs that were consistent with dehydration/clinical shock (A5, CP4). The recommended treatment for dehydration is a fluid bolus of 20ml/kg over 10 minutes for the child in clinical shock or an increase in IV fluids for the child with dehydration and ongoing losses. Coco received half this volume of fluid bolus over an hour with no subsequent increase in IV fluids to the replacement and rehydration rate. (appendix 9) This was a further missed opportunity to correct the fluid management.*

*A review of the blood gas (taken at 20.36) [A7 B3] by the investigation team's clinical expert shows a low carbon dioxide level. Low carbon dioxide is usually a result of faster and/or deeper breathing. This may have been due to pain, or an attempt to make up for higher levels of acid in the tissues due to dehydration (called metabolic acidosis), or both. In addition, the results also show a persistent*

*high lactate level, which also indicates poor tissue perfusion (failure to nourish tissue at the capillary level).*

*The investigation team's clinical expert opinion is that these abnormal blood gas results should have been identified and acted upon at the time. This is a further missed opportunity to build the clinical picture and inform her diagnosis and treatment plan.*

- **22.36**

8.3.11 Coco was given IV paracetamol at 22.36. This is the first time she was provided with pain relief. However, there is no corresponding pain score recorded at this time.

## **8.4: Thursday 27th July**

- **01.00 clinical review**

8.4.1 Dr P completed a clinical review of Coco at 01.00; this is recorded retrospectively in the clinical notes at 04.00. Coco is described as 'warm and well perfused' with a plan to continue with her existing care plan.

8.4.2 Coco's observations were taken at 02.54 (A6 OB 5). Her pain score continued to be recorded as zero; this was despite being described as 'restless and rolling around the bed'. The failure to record an accurate blood pressure persisted.

8.4.3 A blood gas was taken at 03.01 (A7, B5) and demonstrated a compensated metabolic acidosis picture, which suggested that Coco's body was working hard to compensate for the dehydration. Her lactate

remained abnormally high indicating ongoing tissue perfusion problems.

- **04.20 clinical review**

8.4.5 Coco was again reviewed by Dr P at 04.20, who recorded that Coco had a raised heart rate, cool peripheries and a capillary refill time of three seconds (A5, CP5). Coco was to receive a further fluid bolus and her fluid maintenance was to be increased by 5% as replacement for dehydration. Dr P confirmed to the investigation team that she was aware of NICE guidance but was following normal practice for the department.

## Commentary

*In these circumstances the NICE guidance (see A8) and RCHT paediatric departmental guidance (see appendix 13), is that the bolus should be 20ml/kg given over 10 minutes and the replacement for dehydration should usually be replaced over 24 hours. Dr P prescribed the fluid bolus as 10ml/kg over 30 minutes and fluid maintenance to be replaced over 48 hours. This meant that the fluid bolus and the fluid increase was half the recommended amount. In the investigation team's clinical expert's opinion this was another missed opportunity for appropriate intervention.*

8.4.6 At 07.25 nurse 5 who had been caring for Coco overnight recorded in the clinical notes that her nappies showed loose watery stools and she had been vomiting. No stool chart was used to record the detail or appearance of the stools. Nurse 5 told the investigation team she did not remember seeing any fresh blood in the nappies. No blood pressure reading was recorded [see section 9.3.1].

- 07. 45 clinical review

8.4.7 Dr P reviewed Coco again. She recorded that Coco had a temperature of 39.2°C and a raised heart rate (A6, Ob8); she was described as being alert, and her eyes appeared to be less sunken. Her hands were described as ‘warmer’ whilst her feet still felt cool. Her mucous membranes were recorded as ‘dry’ (A5, CP6 see below). Dr P repeated Coco’s blood tests (A7, B6,7).

**Chart CP6**

Clinical Picture 27 July 0745				
Increasing severity of dehydration				
	No clinically detectable dehydration		Clinical dehydration	Clinical shock
Symptoms (remote and face-to-face assessments)	Appears well		Appears to be unwell or deteriorating	-
	Alert and responsive		Altered responsiveness (for example, irritable, lethargic)	Decreased level of consciousness
	Normal urine output		Decreased urine output	-
	Skin colour unchanged		Skin colour unchanged	Pale or mottled skin
	Warm extremities		Warm extremities	Cold extremities
	Signs (face-to-face assessments)	Alert and responsive		Altered responsiveness (for example, irritable, lethargic)
Skin colour unchanged			Skin colour unchanged	Pale or mottled skin
Warm extremities			Warm extremities	Cold extremities
Eyes not sunken			Sunken eyes	-
Moist mucous membranes (except after a drink)			Dry mucous membranes (except for ‘mouth breather’)	-
Normal heart rate			Tachycardia	Tachycardia
Normal breathing pattern			Tachypnoea	Tachypnoea
Normal peripheral pulses			Normal peripheral pulses	Weak peripheral pulses
Normal capillary refill time			Normal capillary refill time	Prolonged capillary refill time
Normal skin turgor			Reduced skin turgor	-
Normal blood pressure			Normal blood pressure	Hypotension (decompensated shock)

  

	No clinically detectable dehydration		Clinical dehydration		Clinical Shock
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8.4.8 At 10.05 prior to the ward round, a further fluid bolus of 10ml/kg over 30 minutes was prescribed by Dr P. This was given and recorded in the fluid prescription chart, but not recorded in the clinical notes.

- **10.43 morning ward round**

8.4.9 Dr E, who was Coco's named consultant, saw her on the ward round that morning. This was the first time he was directly involved in her care. At the morning handover, he had been made aware that the registrar was concerned about Coco and that she had received resuscitation fluids overnight. As the recent fluid bolus, which had been completed at 10.35, had not been recorded in the clinical records he may not have been aware that Coco had received this latest fluid infusion and the impact it may have had on her clinical presentation at the time of his review.

### Commentary

*This bolus meant that Coco had a total of 30ml/kg of fluid boluses administered overnight. Although each fluid bolus was half the recommended amount this meant that she had received a significant amount of fluid over the shift. It is the opinion of the investigation team's clinical expert that most children requiring this level of fluid review would be admitted to a high dependency or intensive care facility.*

8.4.10 The ward round examination recorded that Coco was breathing quickly. She had a capillary refill time of less than two seconds, moist mucous membranes, and cracked lips. She was described as being alert, lying in bed interacting, saying words (A5, CP7 see below).

**Chart CP7**

Clinical Picture 27 July 1043				
Increasing severity of dehydration				
	No clinically detectable dehydration		Clinical dehydration	Clinical shock
<b>Symptoms (remote and face-to-face assessments)</b>	Appears well		Appears to be unwell or deteriorating	-
	Alert and responsive		Altered responsiveness (for example, irritable, lethargic)	Decreased level of consciousness
	Normal urine output		Decreased urine output	-
	Skin colour unchanged		Skin colour unchanged	Pale or mottled skin
	Warm extremities		Warm extremities	Cold extremities
	<b>Signs (face-to-face assessments)</b>	Alert and responsive		Altered responsiveness (for example, irritable, lethargic)
Skin colour unchanged			Skin colour unchanged	Pale or mottled skin
Warm extremities			Warm extremities	Cold extremities
Eyes not sunken			Sunken eyes	-
Moist mucous membranes (except after a drink)			Dry mucous membranes (except for 'mouth breather')	-
Normal heart rate			Tachycardia	Tachycardia
Normal breathing pattern			Tachypnoea	Tachypnoea
Normal peripheral pulses			Normal peripheral pulses	Weak peripheral pulses
Normal capillary refill time			Normal capillary refill time	Prolonged capillary refill time
Normal skin turgor			Reduced skin turgor	-
Normal blood pressure			Normal blood pressure	Hypotension (decompensated shock)

  

	No clinically detectable dehydration		Clinical dehydration		Clinical Shock
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8.4.11 The results of Coco’s bloods and gas were reviewed as part of this ward round; however, the blood results were from the previous day, at 15.38 (A7, B1). The latest results, 02.07 (A7, B4), and the sample taken by Dr P at 08.56 (A7, B7) were not reviewed. The blood gases reviewed were the latest ones from 08.46 (A7, B6).

8.4.12 Dr E told the investigation team that he was told that Coco’s ‘bloods were ok and that she didn’t have HUS’. He could not recall knowing the blood gas result or the clinical observations at the time of his review, even though it was recorded in the contemporaneous clinical documentation.



- 8.4.13 Dr E told Coco's parents that the most likely diagnosis was bacterial gastroenteritis and it was very unlikely to be connected to rat poison ingestion. He discussed with them the risks and benefits of antibiotic usage, as this can make some E-coli gastroenteritis infections worse, and he recommended that they hold off prescribing antibiotics at this stage (see section 9.3.6).
- 8.4.14 Dr E told the investigation team that he did not remember viewing the fluid prescription nor being aware of the way in which the IV infusion rate had been calculated. He agreed that the usual fluid bolus used in dehydrated children would be 20ml/kg but was not able to explain why 10ml/kg boluses had been used overnight, nor why the replacement fluid had been calculated at half the usual rate.
- 8.4.15 Coco's clinical observations were not reviewed in a graphical format (A10) where trends would have been visible. Dr E told the investigation team that his normal practice would be to use the computer on the nursing station to look at the observations in a graphical format but couldn't recall why he didn't do so on this occasion.

## Commentary

*If the latest results had been used the increasing urea (suggesting worsening dehydration despite the fluid boluses) would have been apparent. The latest gas result was reviewed, but the abnormalities on it (the compensated metabolic acidosis and persistently high lactate) were not commented on in the plan from the ward round.*

*By this time several sets of observations had been taken since Coco's admission. Had these been viewed graphically her persistent tachycardia and the lack of a*

*blood pressure recording as well as her intermittent tachypnoea and pyrexia would have been easily seen. It is the opinion of the clinical expert that if the fluid management plan, the observation graphs, the blood gases and the up to date blood results had been thoroughly reviewed, Coco would have had escalation of her treatment and more intensive observation and investigations. This was another missed opportunity to correct her clinical management plan.*

8.4.16 Following the ward round the plan was for a stool specimen to be sent for analysis, and for blood tests results to be expedited. Coco's case was also to be discussed with the microbiologist to obtain specialist advice about antibiotic usage.

8.4.17 Dr E told the investigation team that he wasn't aware of the 08.56 blood test results before the evening handover at 16.30 on the 27 July. The clinical records showed that on a number of occasions blood results were not checked or reviewed for several hours. The investigation team were told that this was a reflection of the acuity of the patients on the ward [see section 9.1].

- 11.50 nursing review

8.4.18 Coco was described as limp, and her heart rate remained high. Nurse 6 described as her as 'so distressed', 'flinging her arms'. Nurse 6 was unable to obtain a blood pressure reading at this time. Throughout this time Coco's pain score was recorded as zero. Nurse 6 told the investigation team that Coco 'looked like a child with horrible diarrhoea and vomiting. She looked a bit dry and had loose stools'. She was continuing to retch and wasn't taking anything orally (A6 Ob9).

## Commentary

*During this shift Coco was not reweighed and her blood pressure was not recorded. Whilst staff felt that one reason it was difficult to record a blood pressure was that Coco had a diagnosis of autism, no referral was made to the learning disability team (see section 9.7).*

8.4.19 An entry in the clinical notes made by the junior doctor records that four attempts were made to contact microbiology throughout the day but that there was no answer. A stool specimen was sent to the laboratory as planned; this was reported on 3 August as a confirmed growth of E. coli 0157.

- **18.40 clinical review**

8.4.20 Dr H, on-call consultant for that night, came on duty at 16.30. She recalled a long handover, which concluded around 18.00. She told the investigation team that 'It was a busy day' 'I felt that there were a lot of loose ends ...it didn't feel safe at that point, made us feel very uneasy... I wanted to go and see everything.' She told the investigation team that it was not unusual to see this level of acuity, and they 'occasionally see days like these'. Dr F, who was the resident evening consultant on duty, was busy with the flow of new referrals. There were three patients in the high dependency unit.

8.4.21 Coco was handed over to Dr H as a HDU patient and in need 'of a clinical review but not an emergency review'. She saw her in the side room opposite HDU and it was clear to Dr H that Coco was not well. She told the investigation team that she remembered the nurse was concerned about Coco and she noted that she had been tachycardic all day.

- 8.4.22 Dr H reviewed Coco and recorded in the clinical records that she had acute bacterial gastroenteritis, with ongoing losses - both vomiting and diarrhoea - but had not passed any blood since the previous day; that she had a temperature and had a raised pulse rate. It was recorded that her fluid balances were difficult to assess due to the losses not being clearly recorded or identifiable. She also recorded that Coco's mother had said she was passing high coloured urine in small quantities. On examination Dr H described Coco as being well perfused centrally (her central capillary refill time was normal) with moist mucous membranes. Her abdominal examination was normal with bowel sounds heard. (A5 CP8)
- 8.4.23 Dr H discussed Coco with the on-call consultant microbiologist, who advised starting antibiotics. However, this did not happen at this time, as there was still the concern that Coco had gastroenteritis and may develop HUS. In both diagnoses antibiotics would not normally be given. Dr H recorded in the clinical records her conversation with Coco's mother, who was tearful, 'as fears antibiotics maybe harmful to her child'. Dr H explained to Mrs Bradford that she would make an informed decision once the blood results were back [see section 9.3.6].
- 8.4.24 Dr H told the investigation team that at her 18.40 review she was not aware of the fluid management regime or how the fluid rate had been calculated. She could not remember why that was not part of her review. Dr H could also not recall if she reviewed the blood gas result but felt that Coco's platelet result was normal.
- 8.4.25 Dr H made a management plan for Coco: to repeat the blood tests and dependent on the results to decide whether to start antibiotics. Dr H told the investigation team that it was very important that blood tests were 'done as soon as possible'. She went home after the 18.40 review.

Before leaving the ward she requested that 'the evening registrar and consultant ensure these bloods were taken urgently'. She was then on call from home for the rest of the night of 27/28th July 2017.

## Commentary

*The blood gas continued to show a low carbon dioxide level (A7, B6) suggesting Coco was continuing to compensate for a metabolic acidosis from the dehydration. The blood results Dr H reviewed were from the morning (08.56 A7, B7), and these showed a platelet count which had dropped from 278 (A7, B1) to 173. The normal range is 150-400. However, as Coco was being monitored for the development of HUS, a falling platelet count would have been one of the indicators being looked for. The 08.56 (A7, B7) blood results also showed a continued rising urea, which is an indication of increasing dehydration.*

*It is the opinion of the investigation team's clinical expert that if the clinical assessment had included a review of the fluid management plan, the cumulative blood and gas results and the continued abnormal observations, then escalation of Coco's treatment would have occurred. This was another missed opportunity to affect the course of Coco's illness.*

- **20.10 nursing review**

8.4.26 Coco's nursing care was handed over to staff nurse 7 at 20.10. She was also looking after another very sick child who was in a side room at the opposite end of the ward. This meant there was a continued journey between the two rooms and an inability to keep a close eye on either patient.

- 8.4.27 Nurse 7 recorded in the notes that Coco's temperature was normal (A6, Ob13), she continued to receive IV fluids, and was having thick yellow bile vomits. She was unable to record accurately how much fluid Coco was losing, as the vomit wasn't always captured in a bowl. Therefore, this affected the accurate record of fluid loss and determination of fluid balance.
- 8.4.28 It was recorded in the nursing notes that Coco remained restless. At 20.30 Coco was given paracetamol. Her pain assessment continued to be recorded as zero - the absence of pain. During this shift Coco was not weighed and no blood pressure recording was made.
- 8.4.29 Mrs Bradford requested that Coco be given some additional pain relief to settle her. At 22.48 she was given a dose of chloral hydrate; this is a sedation agent, not pain relief. The clinical record did not record the reason for prescribing chloral hydrate. Coco was unable to tolerate it and vomited after it was given. Her pain score had been recorded as zero.
- **22.30 estimated time of the clinical review**
- 8.4.30 Coco was reviewed by Dr P; this consultation is documented in the clinical record as having taken place at 01.00. Many of the plans made from this review were conducted before this time, therefore the likely time of review by Dr P was actually about 22.30. This review by Dr P recorded three areas of concern: gastroenteritis with 5-10% dehydration, blood results suggestive of HUS, and bilious vomiting.
- 8.4.31 On examination Dr P found Coco to have a high heart rate and respiratory rate, normal capillary refill time but with "feet and hands cool".

8.4.32 Dr P found Coco’s neurological status difficult to assess; she was described as “restless”. Her fluid balance remained difficult to assess due to poor data capture and charting. She was documented as having ‘eyes less sunken’ and ‘not oedematous’ (no excessive fluid). She was weighed, which showed she had gained 3kg since admission. Her abdominal examination was normal; bilious vomiting and brown liquid stool was noted (A5 CP9). See table CP9.

**Table CP9**

Clinical Picture 27 July Estimated to be 2230					
	No clinically detectable dehydration		Clinical dehydration		Clinical shock
<b>Symptoms (remote and face-to-face assessments)</b>	Appears well		Appears to be unwell or deteriorating		-
	Alert and responsive		Altered responsiveness (for example, irritable, lethargic)		Decreased level of consciousness
	Normal urine output		Decreased urine output		-
	Skin colour unchanged		Skin colour unchanged		Pale or mottled skin
	Warm extremities		Warm extremities		Cold extremities
	<b>Signs (face-to-face assessments)</b>	Alert and responsive		Altered responsiveness (for example, irritable, lethargic)	
Skin colour unchanged			Skin colour unchanged		Pale or mottled skin
Warm extremities			Warm extremities		Cold extremities
Eyes not sunken			Sunken eyes		-
Moist mucous membranes (except after a drink)			Dry mucous membranes (except for ‘mouth breather’)		-
Normal heart rate			Tachycardia		Tachycardia
Normal breathing pattern			Tachypnoea		Tachypnoea
Normal peripheral pulses			Normal peripheral pulses		Weak peripheral pulses
Normal capillary refill time			Normal capillary refill time		Prolonged capillary refill time
Normal skin turgor			Reduced skin turgor		-
Normal blood pressure		Normal blood pressure		Hypotension (decompensated shock)	

  

	No clinically detectable dehydration		Clinical dehydration		Clinical Shock
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8.4.33 Based on Coco's clinical presentation and the blood results, Dr P diagnosed Coco as having Haemolytic Uraemic Syndrome (HUS). She requested that Coco have an abdominal x-ray. From the notes the reason for the x-ray appears to be in response to the new symptom of vomiting bile. Dr P also requested a surgical opinion to investigate this symptom. Additionally, she discussed Coco with her consultant Dr H by telephone.

### Commentary

*The bloods reviewed (taken 21.46 (A7, B8) were significantly worse than the blood result at 08.56 (A7,B7). The creatinine levels had increased by 60% and were now in the abnormal range, the urea had continued to rise, platelets had fallen, all of which suggested HUS had developed and Coco was going into renal failure. Her white cell count, particularly the neutrophils (white blood cells which fight bacteria) had dramatically risen, the CRP (inflammation marker) had also significantly increased. Both of these rapidly rising parameters indicated serious infection. The blood gas result showed a reducing pH and a rising carbon dioxide (Coco's blood was becoming more acidic), indicating that Coco was no longer able to compensate for the metabolic acidosis (A5, CP9).*

*The medical description for Coco's clinical state at this point is a decompensated metabolic acidosis. It is the opinion of the investigation team's clinical expert that Coco was critically ill and should have been reviewed by the intensive care team and received IV antibiotics. This was a further missed opportunity to affect the course of Coco's illness (see section 9.3.6).*

- 23.00 approximate time of telephone call of Dr P with her consultant, Dr H



8.4.34 During the telephone discussion between Dr P and her consultant Dr H a management plan was made. It was agreed to discuss Coco with the Bristol renal team; to reduce her IV fluids; to catheterise Coco and to repeat bloods in six hours' time and not to give antibiotics.

8.4.35 Dr H told the investigation team that she remembered discussing with Dr P the need to manage Coco as if she had HUS: 'I asked her to discuss mode of transfer and to plan for transfer to Bristol'. Dr H offered to go to see Coco at midnight, but this wasn't felt necessary by her or Dr P at this point.

### Commentary

*The decision to significantly reduce the IV fluid infusion for Coco was made on the assumption that her deteriorating picture was due to renal failure rather than dehydration.*

*The decision not to give antibiotics was made on the assumption that she was unwell with HUS and renal failure rather than sepsis. Dr P updated Coco's parents about this plan.*

*It is the opinion of the investigation team's clinical expert that these assumptions were incorrect and Coco was now critically ill with dehydration/clinical shock and sepsis (see section 9.3.6).*

- 23.20 telephone call between Bristol renal team (Dr K) and RCHT (Dr P) registrars

- 8.4.36 The Bristol renal registrar (Dr K) received a telephone call from Dr P asking for advice at 23.20. This was the first of three calls over the night of 27 July and the early morning of 28 July.
- 8.4.37 Dr K documented that Coco was 'noted to have a poor response to fluids', which meant that her condition had not improved with the fluid management to date. Dr K recommended the replacement of losses (diarrhoea and vomiting), and a further fluid bolus if Coco was poorly perfused (meaning prolonged capillary return, cold peripheries or low blood pressure).
- 8.4.38 Dr K recorded in her clinical notes 'will need WATCH transfer' which indicated she felt Coco was critically ill and required the intensive care retrieval team (WATCH) so she could be moved to Bristol for paediatric intensive care. Dr K told the investigating team of a significant discussion she had with Dr P at this time about antibiotics in light of her concern about sepsis. Dr K recalls using "strong language" to convey to Dr P how unwell the child was at this stage.
- 8.4.39 Following this conversation she expected that Dr P would call the WATCH team for intensive care retrieval as soon as the phone call between the two registrars was completed. Dr K also told the investigation team that she remembered that she had a discussion with her consultant about the use of antibiotics, as Dr P was not happy to administer them. Dr K was concerned that there was a translocation of the gut bacteria to the blood stream so felt that the clinical picture warranted antibiotics being given immediately.
- 8.4.40 After the telephone call Dr P recorded in the RCHT clinical notes: 'discussed with renal team re: above [the plan], agree with plan. Will

discuss with renal consultant and call back re: transfer'. She did not record the need for ITU review or ITU retrieval nor the fluid bolus.

## 8.5: Friday 28th July

- **00.15**

8.5.1 A blood pressure was obtained and was recorded at 00:15 as low at 85/65 (A6, Ob16). This was the first time during her admission that Coco's blood pressure was successfully obtained and recorded. Alongside a high heart and respiratory rate, a parental/nursing concern was recorded on PEWS (paediatric early warning system). This was the first time Coco's PEWS score was recorded as 4 (requires immediate action of increased observation frequency and medical review). This prompted escalation from Nurse 5 to the nurse in charge, the junior doctor and the registrar (see section 9.3.1).

- **01.00**

8.5.2 At 01.00 Coco had a surgical review with the on-call surgical registrar who recorded that Coco 'does not need surgical intervention at this stage'. It was agreed a further surgical review would take place in the morning.

8.5.3 Coco's observations were taken at 01.09 and at 02.16 her heart rate was high and her temperature abnormally low (35.5°C), although no blood pressure was recorded, and her pain was recorded as zero (A6, Ob17, Ob18).

- **02.27**

8.5.4 Coco had an abdominal x-ray. This took place in the radiology department. The x-ray report stated:

Abdomen: There is significantly increased bowel wall thickening in the right side of the abdomen, consistent with intramural haemorrhage (bleeding into the wall of the bowel). There are dilated loops of bowel present on the left side. Ultrasound should be considered.

### Commentary

*Coco's x-ray could have been performed as a portable film on Polkerris ward. It is recognised that a better-quality image is obtained when done in the radiology department. However, it is the opinion of the investigation team's clinical expert that Coco should not have gone to that department as she was too unwell (A5, CP9).*

- **03.27**

8.5.6 Coco was reviewed by nurse 5, who commenced neurological observations; she recorded that there was decreased strength in both arms and legs. Her heart rate was high, and her temperature was not taken, and blood pressure was still very low at 68/48 (A6, Ob19; A5, CP10).

- **04.00 clinical review**

8.5.7 Dr P reviewed Coco. Her observations continued to be recorded as abnormal, including a continued raised pulse rate, prolonged capillary refill time peripherally but normal centrally, a difficult to obtain but low blood pressure, cool peripheries, a reduced conscious level, and again Coco was recorded as being "restless". No assessment of her pain was made (A5, CP11).

- 8.5.8 An attempt was also made to catheterise Coco, but as no urine output was obtained, the catheter was felt to be misplaced and so was removed. It is possible that her bladder was empty and thus the catheter did not drain urine even though it was correctly positioned.
- 8.5.9 Repeat bloods were taken with a plan to contact the renal team at Bristol and consultant Dr H with these results.
- 8.5.10 The prescription chart and nursing records shows that an IV fluid bolus was given at this time, but was this wasn't documented by Dr P.
- 04.30 – nurse review
- 8.5.11 Nurse 5 reviewed Coco; her parents were concerned that she was in pain and very restless. A dose of IV morphine was given. Her pain score continued to be assessed as zero. The medical record shows that morphine had been given, but not the reason why.
- 04.56 further telephone call between Bristol (Dr K) and RCHT (Dr P) registrars (Bristol records)
- 8.5.12 Dr P sought further advice from the Bristol renal registrar Dr K. Dr K recorded in the Bristol clinical notes that the patient had a high heart rate, a low pulse volume and an unrecordable blood pressure. Dr K documented that her impression was Coco was 'periarrest' (the period before or just after full cardiac arrest).
- 8.5.13 In her interview with the investigation team Dr K confirmed that from this telephone exchange she was very worried about Coco. When Dr P described her status Dr K recalls asking, 'has she arrested? Is she

conscious? Does she have a pulse?' Dr P did not record this conversation in the RCHT records.

8.5.14 At her interview with the investigation team Dr P told the investigation team this was not her recollection of the conversation. Dr P said 'she didn't say she was that worried'. Dr P told the investigation team that if she had had known that Dr K felt Coco was periarrest she would have taken different action.

- **07. 00 clinical review**

8.5.15 Dr P reviewed Coco and she recorded in the clinical records that Coco had continued abnormal observations and clinical signs. She had an increased heart rate and respiratory rate, an abnormally low temperature (35.9 0C), prolonged capillary refill time, reduced pulse volume and was now oedematous (fluid collecting in the tissues causing swelling, a sign of fluid balance problems such as renal failure or sepsis).

8.5.16 Her blood pressure varied from a systolic of 80-90 mmHg to unobtainable. Dr P recorded that Coco was more settled, having received morphine, and that she was only rousable by voice or touch. Her repeat blood results remained very abnormal.

8.5.17 Dr P's plan was to discuss Coco with Dr H and the Bristol renal team. Dr K documented a telephone call to Bristol at 07.00; both registrars (Dr P and Dr K) record the same plan in their clinical record, to discuss with their respective consultants and arrange transfer to Bristol (A5, CP12, A6, Ob20-22).

**Table CP12**

Clinical Picture 28 July Review at 0700			
Increasing severity of dehydration			
	No clinically detectable dehydration	Clinical dehydration	Clinical shock
Symptoms (remote and face-to-face assessments)	Appears well	Appears to be unwell or deteriorating	-
	Alert and responsive	Altered responsiveness (for example, irritable, lethargic)	Decreased level of consciousness
	Normal urine output	Decreased urine output	-
	Skin colour unchanged	Skin colour unchanged	Pale or mottled skin
	Warm extremities	Warm extremities	Cold extremities
Signs (face-to-face assessments)	Alert and responsive	Altered responsiveness (for example, irritable, lethargic)	Decreased level of consciousness
	Skin colour unchanged	Skin colour unchanged	Pale or mottled skin
	Warm extremities	Warm extremities	Cold extremities
	Eyes not sunken	Sunken eyes	-
	Moist mucous membranes (except after a drink)	Dry mucous membranes (except for 'mouth breather')	-
	Normal heart rate	Tachycardia	Tachycardia
	Normal breathing pattern	Tachypnoea	Tachypnoea
	Normal peripheral pulses	Normal peripheral pulses	Weak peripheral pulses
	Normal capillary refill time	Normal capillary refill time	Prolonged capillary refill time
	Normal skin turgor	Reduced skin turgor	-
	Normal blood pressure	Normal blood pressure	Hypotension (decompensated shock)

  

	No clinically detectable dehydration		Clinical dehydration		Clinical Shock
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- **08.00 clinical review, consultant Dr H**

8.5.18 Coco’s observations and examination remained very abnormal with a high heart rate and respiratory rate, her oxygen saturation level had also now dropped. Her capillary refill time remained prolonged and her blood pressure very low at 68/48.

8.5.19 Dr H made a telephone call for advice to the renal consultant at Bristol, Dr L. He advised a further fluid bolus, an infusion of sodium bicarbonate (to treat the acidosis) and referral to local (RCHT) ICU and to the WATCH team. Dr H therefore discussed Coco with Bristol



consultant Dr M from the WATCH team, who recommended arterial access to obtain Coco's accurate blood pressure; urinary catheter; further fluid bolus, and that the WATCH team would come to prepare Coco for transfer to Bristol.

- **08.10 nurse review**

8.5.20 Nurse 5 recorded that Coco was 'really distressed', so IV paracetamol was given. It was noted that Coco had still not slept and Nurse 5 documented 'parents feel she is scared'. Coco was handed over to the day staff nurse, 10, who described Coco as so ill she required 1:1 nursing. Her observations such as heart rate and oxygen saturation levels were continually monitored via the saturation probe that was in place throughout the morning. Coco's blood pressure was not taken and nurse 10 told the investigation team that this was because this intervention distressed her. As she had just settled at this point, and in agreement with Mrs Bradford, it was decided to allow her to sleep.

- **0840 clinical review**

8.5.21 Dr H had recorded Coco's blood pressure using a doppler as it had been difficult to obtain with the normal electronic blood pressure machine. As her blood pressure reading was so low, the clinical team felt it was unreliable. Dr H recorded in the notes 'BP 68/48...difficult to get reliable reading'. Dr N of the Intensive Care Unit (ICU) was asked to assist with obtaining an accurate blood pressure.

8.5.22 Dr N told the investigation team that on first arriving on the ward at 09.00hrs he was told by Dr H that the blood pressure had now been obtained. Coco was described as settled so he was not needed. Dr N therefore returned to ICU.

## Commentary

*It is the opinion of the investigation team's clinical expert that Coco's low blood pressure readings were likely to have been accurate. Her clinical team did not recognise how critically ill she was and therefore presumed the equipment and technique were preventing an accurate measurement.*

- **10.00 clinical review and transfer to ICU**

8.5.23 Dr N returned to Polkerris ward at 10.00 to review Coco. He recognised that Coco had deteriorated within the hour. He remained with Coco as she was transferred to ICU. The paediatric consultant, Dr H, completed her on call shift at 09.00 and handed over Coco's care to the ICU consultant. A paediatrician did not attend with Coco to ICU [see section 9.5].

- **11.30 nursing notes from Polkerris ward prior to going to ICU**

8.5.24 It was recorded in the nursing notes at 11.30 that Coco had been asleep at 08.00, but able to be roused by touch and voice, but she became more difficult to rouse over the shift. She was peripherally cool with a central temperature 38.5°C, and a capillary refill time of 2-3 seconds. Her urine output was recorded as minimal, and she had no further urine output prior to going to ITU.

## Commentary

### *Further care*

*Coco was admitted to RCHT ICU at 10.49. On ICU Coco was stabilised by Dr N with telephone advice from Dr M. He noted at interview with the investigation team*

*that 'what the RCHT [ICU team] achieved in a such short space of time was admirable'.*

*The WATCH retrieval team arrived at 12.30 and took over Coco's care with support from Dr N's team until they left at 17.00, as Coco was not stable enough to travel before this time. She arrived at Bristol at 21.10.*

*During her time in RCHT ICU and on the journey to Bristol Coco received over 100ml/kg of fluid resuscitation and required two continuous infusions of inotropes (blood pressure medications). At handover from Dr M to Dr O, the Bristol ICU consultant, Coco's diagnoses were listed as E coli sepsis, septic shock, HUS and persistent metabolic acidosis.*

*Coco remained critically ill on ICU despite multiple interventions, and sadly died, surrounded by her family, at 11.35 am on 31 July 2017.*

*Coco's death certificate records her death as: 1a Multi organ failure and 1b Escherichia Coli 0157 associated with Haemolytic Uraemic Syndrome.*

## Section 9: Opportunities for improvement: care, service delivery and contributing factors

Throughout the investigation a number of opportunities for improvement in clinical care and service delivery and contributory factors have been identified and evidenced. These are discussed below.

### 9.1: Paediatric activity

- 9.1.1 Throughout Coco's admission period RCHT hospital was on OPEL levels 3 and 4 - experiencing major pressures on patient flow and delivery. The paediatric service was busy with high numbers and acuity of patients. The investigation team heard from medical and nursing staff that the service was under pressure during this period.
- 9.1.2 The investigation team discussed with staff in interviews what procedures were in place when the paediatric inpatient services had operational pressures (acuity, intensity and volume of patients). It was apparent from these discussions that knowledge and use of the RCHT escalation policy was not evident. Action that was taken in these circumstances was inconsistent and varied. The investigation team reviewed the policy that was in place in July 2017 and the subsequent updated policy. There are a number of omissions within these policies.
- 9.1.3 There is no reference to closure of the paediatric inpatient unit or of redirecting patients to other hospitals when there are capacity or safety concerns within the department. This means that paediatric patients may continue to arrive even when the department is at full capacity. This is a safety risk, as the staff-to-patient ratios will not be maintained, and this will compromise the delivery of safe care. Most paediatric units work with other local providers to deliver a system of

stabilisation and transfer of patients who require admission when the unit is at capacity. At RCHT there is a neonatal regional operational delivery network, which ensures when there are no cots at RCHT there is a system in place for babies to be transferred to another appropriate provider. This system does not extend to other paediatric patients.

## 9.2: Resources and environment

- 9.2.1 Overnight medical cover consisted of one paediatric registrar, supported by a junior doctor, with consultant cover provided remotely from home. The registrar as the most senior doctor on site is responsible for 49 beds, which includes three HDU beds, a 20-cot Local Neonatal Unit (LNU), and any paediatric patients referred by GPs or the emergency department. Most hospitals covering this range of service and capacity would have two trained paediatric doctors resident at all times.
- 9.2.2 Coco's room was located off the main ward corridor, slightly isolated from the rest of the ward [See 8.3.2]. This, and the fact that staff had to follow infection control procedures using personal protective equipment to enter her room, meant that she was less accessible and out of the general line of sight of staff passing by. Her parents were also very involved in her personal care, which may have reduced the frequency of the routine care by the nursing staff, for example nappy changing.
- 9.2.3 This room was not commissioned for high dependency use, although it did contain equipment that could be connected to the central hub on the nursing station. However, this was not connected during the time that Coco was in this room.

## 9.3: Observations and assessments

### 9.3.1 Blood pressure

9.3.1.1 The first blood pressure reading for Coco was not obtained until 00:15 on the 28 July, nearly 36 hours after her admission. With Coco's clinical presentation of gastroenteritis and the fact that she was being monitored for the development of renal problems, regular blood pressure readings were essential observations to record.

9.3.1.2 A lack of blood pressure reduces the accuracy of the PEWS (Paediatric Early Warning Score) score. Whilst blood pressure alone is not the only key indicator in paediatric care, clinical decisions are made based on the results of PEWS, of which blood pressure is a factor.

### 9.3.2 Capillary refill time

9.3.2.1 On the electronic patient record (EPR) system the range for the capillary refill time is classed as "less than or equal to 3 seconds"; however, three seconds is an abnormal result and suggests the patient is in clinical shock. The way the EPR system is configured may have prevented staff from recognising the relevance of a capillary refill time of three seconds.

### 9.3.3 Assessment of pain score

9.3.3.1 The assessment of pain is an example where the nursing staff did not apply the FLACC assessment tool (see glossary) to support their clinical judgement. On many occasions Coco was described as 'distressed', 'inconsolable' or 'agitated', but her pain score was recorded as zero, not having pain. However, she was prescribed paracetamol on several occasions, which would have been given as analgesia (pain relief).

9.3.3.2 During interviews with the nursing staff they were unable to say why these non-verbal signs were not considered to be indications of pain. The nursing staff were reliant on Coco's parents' feedback, rather than formally assessing pain. Although parents' views might be useful in understanding how children express pain, this should not be considered in isolation. Appropriate clinical assessment tools and clinical expertise should be used.

### **9.3.4 Blood and gas results**

9.3.4.1 The most up to date blood and gas results were not always used to inform timely clinical decision-making. The clinical notes did not always record when the blood results were reviewed. This meant that key clinical markers were not identified or discussed at the earliest opportunity. There is little evidence that the blood gas results were fully considered or interpreted; for example this is apparent by the lack of comment within the notes of the low carbon dioxide level and the high lactate. There was evidence in the notes of a cumulative blood result chart, but it was not fully completed and there was no evidence of a similar chart for blood gases. Such charts allow a review of all results so that trends and progress over time can be easily seen.

9.3.4.2 There was a prolonged period on 27 July when Coco did not have any bloods taken for thirteen hours. At some point during this period she developed HUS. If blood had been taken the clinical markers may have identified this.

### **9.3.5 Fluid management calculation**

9.3.5.1 NICE guidance (see appendix 8) sets out four elements to consider when prescribing IV fluids for children. If the NICE guidelines for fluid

management had been applied at the time of Coco’s admission on 26 July, she would have had a different initial treatment regime, receiving 320ml of normal saline intravenously over ten minutes as a bolus (possibly repeated dependent on response). This would have been followed by an IV infusion running at 120ml/hour made up of maintenance and 10% deficit replacement. She would also have had her ongoing diarrhoeal and vomiting losses replaced. The management plan that was implemented delivered no fluid bolus, no deficit replacement and no replacement of ongoing fluid losses. She only had a maintenance infusion at 54ml/hour.

9.3.5.2 These four elements were consistently not applied in Coco’s care by the paediatric team at RCHT. This was also contrary to their own departmental guidelines.

### 9.3.6 Use of antibiotics and sepsis

9.3.6.1 NICE guidance for the recognition and early management of sepsis [see references] provides a risk stratification tool for children aged 5-11 with suspected sepsis – see table 2. The areas in bold show what Coco’s clinical presentation was at the time of her assessment in the emergency department on 26 July.

**Table 2 Risk stratification tool for children aged 5–11 years with suspected sepsis (NICE)**

Category	Age	High risk criteria	Moderate to high risk criteria	Low risk criteria
Behaviour	Any	Objective evidence of altered behaviour or mental state	Not behaving normally	Behaving normally
		Appears ill to a healthcare professional	Decreased activity	
		Does not wake or if roused does not stay awake	Parent or carer concern that the child is behaving differently from usual	
Respiratory	Any	Oxygen saturation of less than 90% in air or increased oxygen requirement over baseline	Oxygen saturation of less than 92% in air or increased oxygen requirement over baseline	No high risk or moderate to high risk criteria met
	Aged 6-7	Raised respiratory rate: 27 breaths per minute or more	Raised respiratory rate: 24–26 breaths per minute	
Circulation and hydration	Any	Heart rate less than 60 beats per minute	Capillary refill time of 3 seconds or more	No high risk or moderate to high risk criteria met
	Aged 6-7	Raised heart rate: 120 beats per minute or more	Reduced urine output For catheterised patients, passed less than 1 ml/kg of urine per hour	
Temperature	Any		Tympanic temperature less than 36°C	
Skin	Any	Mottled or ashen appearance		
		Cyanosis of skin, lips or tongue		
		Non-blanching rash of skin		
Other	Any		Leg pain	No high or moderate to high risk criteria met
			Cold hands or feet	



- 9.3.6.2 Using this table, it can be seen that Coco met most of the high-risk criteria for sepsis at the time of her admission on 26 July. The NICE guidance recommends a series of interventions for such a presentation, including a fluid bolus and antibiotics. Coco received neither of these. However, she did receive the other recommendations: blood tests and an immediate review by a senior doctor. The symptoms of bloody diarrhoea and vomiting made a diagnosis of gastroenteritis very likely. It is not routinely recommended that this diagnosis be treated with antibiotics (NICE guidance – see references). Because of this and the fact that the first blood results, apart from the high lactate, were not consistent with a serious infection, the decision was taken not to give antibiotics at admission.
- 9.3.6.3 The use of antibiotics was regularly discussed by several senior doctors and with Coco’s parents. The reason for withholding antibiotics was based around the risk of HUS development. From reviewing the course of Coco’s illness, it seems unlikely that on admission (26 July 2017) she had disseminated bacterial sepsis (an infection which had spread beyond the gut into the bloodstream). If she had, her deterioration, without antibiotics, would normally have been quicker. Rather she presented with evidence of gastrointestinal (gut) infection and clinical shock from dehydration.
- 9.3.6.4 Coco deteriorated overnight on 27/28 July after the development of HUS on a background of undertreated dehydration. At this point the rapid rise in her infection markers and her deteriorating clinical condition suggest that she had developed a disseminated bacterial sepsis. Antibiotics should therefore have been started at this point. They were not given until 13.22 on 28 July (14 hours later).

9.3.6.5 By the time antibiotics were given she was already critically ill; the preceding period of being dehydrated and often in clinical shock is more likely to have caused her deterioration and critical status. It is not possible to say whether the administration of antibiotics earlier would have made a difference to the progress of Coco's illness.

### **9.3.7 Electronic patient record (EPR)**

9.3.7.1 RCHT use a patient administration and information system to report all clinical observational data. This EPR system records clinical observations and test results. It is displayed on computer screens, which can be viewed on ward terminals or on hand-held devices. This enables clinicians to view the results individually and cumulatively as a graphical view of serial observations or trends. It shows when results fall outside of the normal range (Appendix 10).

9.3.7.2 Trend information is regularly available for those patients in HDU. The trend graph for Coco's in-patient stay at RCHT demonstrated a persistent tachycardia well above the normal range. Throughout the investigation there was no evidence that staff routinely viewed Coco's observational trends to inform their decision-making process.

## **9.4: Application of evidence-based practice and use of national/local guidelines**

9.4.1 Several senior doctors told the team that they were aware of the existence of the NICE guidelines for diarrhoea and vomiting in children (see references). The evidence in the clinical chronology demonstrates that best practice was not appropriately applied or used to underpin the clinical decision-making in Coco's care. This led to a more conservative fluid management regime than is recommended in the

guidance. If these guidelines had been applied at an early stage, the fact that she was clinically dehydrated and exhibiting signs of clinical shock may have been picked up earlier and managed more appropriately (see appendix 9).

## 9.5: Policy on paediatric transfer to an adult ICU

9.5.1 The Paediatric Intensive Care Society Quality Standards 2015 (see references) states that every unit should have a written document detailing the process of children being admitted and cared for on a general (adult) ICU. This includes that every child who is on a general intensive care unit should be under the care of a paediatrician who should be available at all times for advice, and that there should be regular review by a senior member of the paediatric team.

9.5.2 When Coco was transferred from Polkerris ward to ICU, a paediatrician did not accompany her. This was despite her being the most unwell paediatric patient in the hospital at that time.

## Section 9.6: Communication

9.6.1 Good communication between clinical professionals is essential to protect patient safety. The timely and up to date exchange of clinical information between teams is a fundamental aspect of this. Information sharing between those involved in Coco's care was not always effective, and in some instances did not take place. For example:

- On the 27 July the evening consultant did not recall being asked to ensure that blood tests were done urgently that evening
- The on-call, consultant was not aware of communications that had taken place during the night of the 27 July

- There was a telephone discussion between registrars from Bristol and RCHT on the night of 27 and 28 July, with differing accounts of that discussion and Coco's clinical status
- Dr H did not identify that Dr M had recommended an ICU review immediately after their telephone call on 28 July
- Lack of referral to the learning disability team

## 9.7: Involvement of the Learning Disability Team

9.7.1 Coco's autism was mentioned as a reason why observations had been difficult to carry out. Her normal behaviour was not fully explored by her clinical team. Her label of autism was accepted as a reason for her to be restless, incontinent and uncommunicative. However, there was no referral to the Learning Disability Team for support and advice.

9.7.2 The Learning Disability Team told the investigation team they would have been able to assist the nursing team to obtain a blood pressure reading using distraction techniques. However, it would be expected that the paediatric ward team would be skilled in distraction and play therapy.

## 9.8: Record keeping

9.8.1 The investigation team were provided with electronic copies of Coco's medical records. Not all entries were dated, signed and timed; in some of those written retrospectively the timing of the entries was not accurate. Some staff had not recorded in the notes when they had cared for Coco. Very few entries documented the discussions staff had with Coco's parents or her sister(s). From the interviews the investigation team held with the staff who cared for Coco it was evident that there were more discussions with her parents than were recorded.

- 9.8.2 Nursing assessment documentation was found to be incomplete both in the emergency department and on Polkerris ward. This included the lack of recording of observations such as pain (FLACC score) and weight. A stool chart was not completed.
- 9.8.3 Although fluid balance charts were completed neatly they were difficult to interpret because of the inconsistent manner of recording. Several doctors referred to the difficulty in assessing the fluid balance status of Coco throughout her stay.
- 9.8.4 The investigation team were told that routine audits of medical records take place. It would be expected that these audit results would have highlighted deficiencies in documentation.

## 9.9: Use of patient information leaflets

- 9.9.1 The emergency department has a range of patient information leaflets including one on gastroenteritis in children. Coco's parents were not provided with a patient information leaflet on the 25 July 2017, when Coco was discharged home from the emergency department. This would have been useful information for parents to have to help understand their child's condition and any signs or symptoms to be aware of, including when to seek further medical advice.

## 9.10: Clinical supervision

- 9.10.1 Formal clinical supervision is not embedded in the paediatric nursing ethos. The system in place is informal and relies on the member of staff requesting it. It is good practice to have a more formal systematic

approach to clinical practice and is a requirement under regulation 18 of the Health and Social Care Act 2008 (Regulated Activities) (see references). Clinical supervision provides an opportunity for staff to reflect on and review their practice, discuss individual cases in depth, and to change or modify their practice and identify training and continuing development needs.

### 9.11: Summary of factors

<b>Opportunity for improvement</b>	<b>Factor</b>
Paediatric activity	Contributory factor
Resources and environment	Contributory factor
Blood Pressure	Care and service delivery
Capillary refill time	Contributory factor
Assessment of pain	Care and service delivery
Blood and gas results	Care and service delivery
Fluid management calculation	Care and service delivery
Use of antibiotics and sepsis	Care and service delivery
Electronic patient record	Contributory factor
Application of evidence-based practice	Contributory factor
Paediatric transfer to an adult ICU	Care and service delivery
Communication	Contributory factor
Involvement of learning disability team	Contributory factor
Record keeping	Contributory factor
Use of patient information leaflets	Contributory factor
Clinical supervision	Contributory factor

## Section 10: Quality Governance

*This section addresses the requirement in the Terms of Reference to ‘review the Trust’s compliance with and management of its internal serious incident review processes; its duty of candour and its dealings with/responses to Coco’s family from the time of her death until the commissioning of the independent investigation’.*

### 10.1: Incident and serious incident reporting

- 10.1.1 Every NHS trust is required to have an incident and serious incident reporting policy. The RCHT policy that governed this process in July 2017 was the ‘Incident and Serious Incident Policy’ V1.0 dated April 2016 (see references).
- 10.1.2 On 28 July 2017 Coco was transferred from Polkerris ward to the Intensive Care Unit (ICU). As per the above RCHT policy for incident reporting, all paediatric unplanned admissions to ICU are considered a reportable trigger event and should be reported as an incident.
- 10.1.3 On 4 August 2017 this transfer to the RCHT ICU was reported as an incident and was entered on the trust’s risk management system (RMS), DATIX. The report also referenced Coco’s onward transfer to Bristol Paediatric Intensive Care Unit (PICU) and her subsequent death on 31 July 2017.
- 10.1.4 The reporter of the incident is recorded on the RMS as Dr E. However, he told the investigation team that he had not created this incident on the RMS system. An analysis of the audit trail of this incident was unable to identify who created the incident. As the RMS system has an

anonymous reporting facility, the investigation team have been unable to establish who reported this.

- 10.1.5 Nurse 3 was identified as the incident ‘handler’ (see glossary) and appointed as the incident investigator. The incident was flagged as a potential serious incident and on 8 August 2017 a 72-hour report (see glossary) was produced. The investigation team were told that nurse 3, Dr F and nurse 9 were involved in reviewing the events that led up to Coco’s unexpected admission to ICU.
- 10.1.6 Dr F contributed to this review under the belief that Coco may have died from Hemophagocytic Lymphohistiocytosis, referred to as HLH. This is a condition where the body makes too many activated immune cells and is a life-threatening immunodeficiency condition. Dr F told the investigation team that his view was informed by the clinical summary that had been sent to RCHT from Bristol Royal Hospital for Children (BRHC). Specifically, that this included a reference to further analysis of blood that was being sent to Great Ormond Street Hospital to explore the possibility of HLH. The death certificate stated 1a Multi organ failure and 1b Escherichia Coli 0157 associated with Haemolytic Uraemic Syndrome (HUS).
- 10.1.7 The incident report following the 72-hour review concluded ‘no contributory failings in care identified – patient had frequent and thorough senior medical review...’. The rationale for not escalating to a serious incident investigation was recorded as: ‘No failings in care identified. Condition [HUS] has a 5-10% mortality rate. This case will also be subject to a full child death review led by the Bristol team’. However, HLH is neither mentioned nor taken into account as a potential diagnosis in this report.



10.1.8 This 72-hour report again named Dr E as the reporter; this is most likely because his name was on the original incident report. Dr E told the investigation team that he had not seen the report or been involved in the review.

10.1.9 Dr E was invited to attend the BRHC child death review meeting (Bristol's internal mortality review) on 9 October 2017. He attended this meeting via a telephone link. In preparation for the meeting he reviewed the case notes ahead of the telephone call. During this process, he identified opportunities to learn and improve. He openly discussed these issues during the call.

On 13 October 2017 Dr E and nurse 3 met with Coco's parents to listen to their concerns and to provide explanation and clarification where they could. They provided reassurance and apologised for documentation errors that had concerned her parents. They also reviewed the patient electronic patient record (EPR) to confirm that Coco had not been given antibiotics until her transfer to ICU. Dr E also informed Mr and Mrs Bradford that there was an active investigation underway relating to Coco's care, and that any learning and outcomes from that investigation would be shared with them. He confirmed that aspects of Coco's care and treatment had been discussed at various forums both in Bristol and at RCHT.

10.1.10 On 19 October 2017, Coco's case was discussed at the RCHT Directorate of Child Health Paediatric Mortality Review. At this meeting, several learning points were identified, and it was agreed that a serious incident investigation should be initiated.

On 19 October 2017, Mrs Bradford sent an email to the trust's chief executive to make a formal complaint about Coco's NHS care and

treatment at RCHT between the dates of 25-28 July 2017 (see detail in 10.2).

10.1.11 On 1 November 2017 the trust's chief nurse confirmed that a serious incident investigation had been declared. An investigating officer was appointed. This was declared to the Kernow Clinical Commissioning Group on 2 November 2017 for reporting on to the Strategic Executive Information System (StEIS).

10.1.12 On 2 November 2017 the final version of the Bristol internal child death review meeting minutes (9 October 2017) was published. The report recommended that a local investigation (serious incident level 1) be conducted at RCHT into the management of Coco's care there.

10.1.13 Over the succeeding weeks there were discussions internally and contact was made many times with Coco's parents. Over this period the nominated investigating officer for the serious incident investigation requested that he be stood down. This was because he believed he would not be perceived as sufficiently objective because of his senior position within the directorate.

The communication was not consistent, and it created confusion both at the trust and for the family. On 8 November 2017 the medical director assumed responsibility for the investigation.

On 24 November 2017 Coco's parents received a phone call from the medical director's business manager suggesting a meeting to discuss the situation. The meeting was arranged for 8 December 2017.

10.1.14 On 8 December Coco's parents met with the trust's medical director and Dr E. The medical director's business manager provided

administrative support to the meeting. At this meeting the medical director confirmed his intention to commission an independent investigation into their concerns. He explained to Mr and Mrs Bradford that they would need an independent medical professional from another trust to look at Coco's case. On 12 December 2017 the medical director's business manager confirmed in an email to Mrs Bradford that Facere Melius would be co-ordinating the external review.

10.1.15 On 10 January 2018 Mrs Bradford was sent a letter from the associate chief nurse informing her that the trust was progressing with a serious incident investigation and had commissioned an independent company (Facere Melius) to carry out the investigation. Mrs Bradford was invited to a meeting with the company's managing director on 19 January 2018.

10.1.16 On 19 January 2018 a meeting was convened between Facere Melius, RCHT and Mr and Mrs Bradford and one of Coco's sisters to discuss the process for the investigation.

10.1.17 On 16 February 2018 the independent investigation commission was agreed. This was to be conducted with reference to NHS England's Serious Incident Framework published in March 2015 [appendix 3: Independent Investigation (level 3)]. Investigations under the framework are designed to support learning and prevent recurrence.

## Commentary

*The incident was reported on the trust's risk management system in line with events that had been identified as paediatric triggers for reporting; an unplanned paediatric admission to ICU should have been and was reported. There is confusion about how the incident was reported and who reported it. RCHT have set up their risk management system to enable staff to report anonymously, with the option to provide information to allow the reporter to identify themselves or not. However,*

*this facility would also allow an anonymous reporter to identify another person as the reporter.*

*The processes of the initial 72-hour review (8 August) have been considered carefully by the investigation team. What was intended to be an objective review of the events and circumstances that surrounded a potential serious incident were clouded by the belief that HLH, raised by the BRHC clinical summary, was a significant cause in Coco's death. The trust did not receive formal confirmation of this potential diagnosis until Bristol's final internal mortality review report (Child death Review, 2 November 2017), which subsequently confirmed that HLH was not a cause. It is difficult to understand why, if all the records (particularly of the blood and blood gas results) had been thoroughly reviewed, a serious incident investigation wasn't considered necessary, or why opportunities for learning were not identified and acted upon.*

*In October 2017 routine quality governance processes such as the Bristol internal child death review and reviews of the case (mortality review, and complaint) at RCHT identified opportunities to learn from Coco's death. The need for a level one serious incident investigation (as per the trust policy) was revisited and agreed. Initially, Dr F was identified as the investigating officer; however, he asked to be stood down. After internal deliberations over several weeks it was agreed a level three independent investigation should be commissioned. The decision-making and communications both internally and particularly with the family around these decisions could have been significantly improved.*

*There was a period in October and November 2017 when there was a lot of activity: the outcome of the Bristol review, the RCHT mortality review, establishing a level one investigation, and the complaint from the family. The investigation team have not seen evidence that anyone at a senior level was leading and managing all of the various strands of work relating to this case. Even after the medical director took control of the investigation there continued to be other departments and functions having contact with the family in isolation.*

## 10.2: Complaints management

- 10.2.1 The Local Authority Social Services and National Health Service Complaints [England] Regulations (2009) is the legislation that governs the NHS Complaints Process. Each NHS trust is required to have a published policy on how to make complaints. The trust policy that governed this process in July 2017 was the 'Patient and Service User Feedback Policy' V1.3 dated 17 December 2014.
- 10.2.2 On 19 October 2017 Coco's mother emailed a formal complaint to the chief executive of RCHT. The email cited 'the lack of care, diagnosis, intervention, basic medical procedures received on Tuesday [25 July] and Wednesday [26 July], I believe caused her death' and asked for a 'full investigation' and for a meeting 'with the relevant professionals' to discuss this further.
- 10.2.3 On 20 October 2017 the patient experience team (who are responsible for the management of complaints) acknowledged Mrs Bradford's email, extending their deepest sympathies on the death of Coco and confirming that her concerns had been raised as a formal complaint.
- 10.2.4 On 25 October 2017 Coco's mother received a letter from the chief executive of RCHT (dated 23 October 2017) responding to her letter of complaint. This letter assured her that there would be a full investigation. It confirmed that the associate director (AD) of nursing for paediatric services would be in contact and that the clinical director (Dr F) would lead the investigation.
- 10.2.5 On 1 November 2017 Dr F emailed the chief nurse confirming that he had spoken to Coco's mother the previous day, and that she would like

a 'local resolution meeting' (see glossary) to take place to resolve the complaint. He asked in his email if 'a decision had been made regarding whether this case was a serious incident.'

- 10.2.6 On 15 November 2017 Coco's mother emailed the clinical director Dr F's admin support, who informed her that they were the single point of contact, requesting a local resolution meeting. They responded immediately and confirmed that they would set this up with the relevant health professionals.
- 10.2.7 On 21 November 2017, following a meeting with the Bristol team, Coco's mother emailed the clinical director's admin support. Mrs Bradford stated that she was 'disappointed with the lack of communication' and asked for a list of everyone who was to be invited to the local resolution meeting.
- 10.2.8 On 24 November 2017 Mrs Bradford received a phone call from the medical director's business manager suggesting a meeting to discuss the current situation. The meeting was arranged for 8 December. [as detailed above in 10.1.11]
- 10.2.9 On 14 December 2017 the associate director of nursing for paediatric services called Mrs Bradford to talk about the external investigation, confirming that Facere Melius had been commissioned. She also informed her that a meeting was being set up for January 2018 and that the clinical director and a representative from the emergency department would be at the meeting as well as representatives from Facere Melius.
- 10.2.10 Mrs Bradford told the investigation team that she had a discussion with the associate director for nursing and paediatrics regarding the

questions the family would like considered. She was told that they could be discussed at the meeting in January. Mrs Bradford pointed out the 40-day working deadline set out in the NHS England Complaints Policy had been breached.

## Commentary

*The response to Mrs Bradford’s letter of complaint from the chief executive was positive; it offered personal assurance to undertake a ‘thorough investigation’ and ‘do all we can to provide the information you are seeking’. The letter didn’t however provide clarity under which policy (complaints or serious incident) the trust would be conducting the investigation, the processes to be followed or the timescales involved. This led to confusion both for Mrs Bradford as the complainant and colleagues within the trust.*

*Mrs Bradford also raised concerns that NHS England complaints policy timeframes of 40 days had been breached. The applicable policy was the RCHT Patient and Service User Feedback Policy V1.3 dated 17 December 2014, with a timeframe of 25 days for standard complaints and 60 days for more complex complaints. The NHS England complaints policy did not apply to NHS trusts.*

*At a similar time to the complaint being received (October) internal discussions had begun about reopening the serious incident (see paragraph 10.1.17). Dr F had a telephone conversation with Mrs Bradford in which the idea of the local resolution meeting emerged (although this is not part of the RCHT complaints policy that was in place at this time).*

*On 10 January 2018 the associate chief nurse (FU), who was responsible for the complaints function, wrote to Mrs Bradford to explain that her concerns raised in her complaint were now to be investigated as a serious incident in line with the trust policy. The letter didn’t clearly explain that the intention was to merge the*

*complaint and the serious incident processes into the one investigation. The letter also didn't provide clarity that the local resolution meeting (arranged for 19 January 2018) would not be in a position to provide answers to the questions Mrs Bradford had raised until after the investigation was completed.*

*It can be seen from the above that there were a significant number of people involved in the various strands of managing the complaint that resulted in somewhat chaotic communication with the family. This was as a result of a lack of overall responsibility for one individual to coordinate and engage with Mr and Mrs Bradford.*

### 10.3: Access to medical records

- 10.3.1 The Access to Health Records Act 1990 is the legislation that governs requests for personal data including health records. At the time of the request made by Coco's mother, these requests were referred to as a "subject access request".
- 10.3.2 On 29 August 2017 Mrs Bradford contacted the PALS office to request a copy of Coco's medical records. She was sent an email that contained information on how to do this, along with documents to complete. Mrs Bradford completed these and sent them to the trust on 31 August 2017.
- 10.3.3 On 18 September 2017 Mrs Bradford received an email from the RCHT disclosure office that set out the cost for obtaining Coco's medical records: £49. She called the office and paid the funds so that the notes could be released. She followed this up with a phone call asking if the notes could be released by 22 September in time for a meeting that she had with Bristol Royal Hospital for Children (BRHC). On 21



September 2017 the disclosures office contacted her to let her know that the request was still being processed, and the notes would not be available by 22 September 2017.

10.3.4 On 29 September 2017 Mrs Bradford received a copy of Coco's medical records. Mrs Bradford told the investigation team that when she reviewed them 'they uncovered multiple discrepancies and deficiencies including missing notes, clerical errors, etc'.

10.3.5 On 6 October 2017 Mrs Bradford contacted the disclosures office again and asked for the documents she believed were missing. She was informed that she would need to put her request in writing, which she did.

10.3.6 On 9 November 2017 Mrs Bradford again contacted the disclosure office to enquire about the progress of her request for the missing case notes (made on 6 October 2017). She received an email the following day apologising for the delay. On 21 November 2017, Mrs Bradford contacted them again to enquire about progress.

## Commentary

*The investigation team requested an update from the Head of Information Governance on outstanding access to record requests relating to Coco (made on the 6<sup>th</sup> October 2017).*

*The team were informed that no update was available due to long term sickness absence within the access to health records team.*

*It is acknowledged that there is a legal framework that entitles the trust to charge for the provision of copies of notes. The trust may wish to consider in future cases that are particularly sensitive whether to waive the fee for such cases.*

*It is possible that the delay in providing the documents was caused by the unavailability of the records, which may have been in use to support preparation for mortality meetings, responses to complaints and the review of the incident/serious incident. This has not been verified.*

## 10. 4: Learning from Deaths

- 10.4.1 Learning through review of the care provided to patients who die should be integral to an NHS provider's clinical governance and improvement work (National Guidance on Learning from Death, National Quality Board, March 2017).
- 10.4.2 RCHT were first informed of Coco's death through a clinical discharge summary generated by her stay at the Paediatric Intensive Care Unit at BRHC. The investigating team were told that it did not appear from this summary or the doctors' understanding of Coco's case that there were adverse factors related to her management. This was in the context that HLH was a potential diagnostic factor being explored by BRHC.
- 10.4.3 On 3 August 2017, a few days after Coco had died, her case was discussed in a RCHT multi-professional forum referred to as 'case of the week'. Cases are selected based on the opportunity for professionals to learn about rare or complex cases. This forum and discussion is not intended to provide a comprehensive review of a case. It is not a formal part of the governance process and is not recorded in detail; its purpose is for learning and education.
- 10.4.4 It has already been noted that an incident was reported on 4 August 2017 relating to Coco's unexpected admission to ICU and that the initial

review (although this may have been influenced by the possible diagnosis of HLH) had not identified opportunities for improvement.

10.4.5 It is standard practice for all trusts to undertake reviews of all child deaths that occur under their care to ensure as much learning as possible is captured and implemented to prevent future deaths.

10.4.6 On 9 October 2017 BRHC held their internal mortality review meeting where Coco's case was discussed. Clinicians who had cared for her at Bristol attended, as well as Coco's RCHT consultant, Dr E, who attended via a remote telephone link and prepared by reviewing the case notes. The meeting had access to a number of documents such as clinical records from services involved in Coco's care, and questions the family wanted considered.

10.4.7 Ten days later, on 19 October, RCHT convened a 'Paediatric Mortality Review Meeting' with a similar purpose to the meeting held in Bristol: a multi-professional, multi-disciplinary opportunity to identify learning. In summary these included:

- Level 1 serious incident investigation
- Antibiotic prescribing with HUS
- Timing of escalation to ICU
- Timing of consultant review following admission to PICU
- Physical location of a cubicle in HDU but not a HDU patient
- Accuracy of PEWS scoring and charting
- Importance of reviewing charts and observation trends and IT hardware to support this
- Instigate RCHT mortality processes for children who die following transfer out of county

There were two recommendations and four actions identified from this meeting.

- 10.4.8 The report from the BRHC meeting (9 October 2017) was finalised and published to attendees on 2 November 2017. The report recommended that RCHT should undertake an internal local investigation (serious incident investigation level 1) to review Coco's clinical management at the hospital between 25 – 28 July 2017.

Due to the title of this final report (Child Death Review) and the name of the meeting, confusion and misunderstanding has arisen between this local mortality review meeting and the statutory CDOP review.

- 10.4.9 On 20 November Mrs Bradford attended a meeting at BRHC to review the findings from this report. Coco's parents have queried some of the information contained within the report. The one specific inaccuracy is a reference to Coco having had an ultrasound scan at 02.27 on 28 July. This perceived inaccuracy led Coco's parents to believe that there was an attempt to mislead, and to cover up mistakes. However, as detailed in the clinical chronology summary (section 8.4.33) there is confirmation that Coco had an x-ray on this date at this time in the radiology department. The x-ray report recommended an ultrasound be undertaken; however, this request was not completed, most likely because of Coco's deteriorating condition.

## Commentary

*Following Coco's death there were reviews at both RCHT and BRHC. In addition to this RCHT used the less formal 'case of the week' forum to learn about this complex case. Whilst the national policy 'learning from deaths' had been published in March 2017, the majority of the guidance was not mandated until September 2017. The investigation team are of the opinion that the mortality reviews conducted by both RCHT and BRHC were within the spirit of this policy and followed good practice.*

*Whilst the 'Case of the Week' approach should be encouraged, as informal timely learning from events that occur is a positive approach. However, this would benefit from having the medical records available for the duration of the discussion.*

*During discussions with the investigation team it has been established that some of the recommendations and actions from the RCHT mortality review meeting were paused awaiting the findings of this present investigation. This decision may mean opportunities for learning are being missed.*

*In the Bristol internal mortality review report (Child Death Review) there is a specific reference to a scan that took place on the 28 July 2017. As mentioned above and detailed in section 8, Coco had an x-ray at 02:27 on 28 July, and the investigation team believe this was a genuine misunderstanding in terminology between scan and x-ray. The x-ray report indeed suggests an ultrasound should be considered.*

*Note: Following the conclusion of the investigation, the investigation team were told that the Bristol internal mortality review meeting fulfilled two purposes; one as the internal morality review and the other as the Local Case Review process for the South West CDOP – this, however, has not corroborated.*

## 10.5: Child death overview panel (CDOP)

10.5.1 'Working Together to Safeguard Children 2015' lays out the statutory guidance about how organisations should work together to safeguard and promote the welfare of children. Within this guidance is a requirement for the Local Safeguarding Children Board (LSCB) to undertake reviews into all deaths of children under 18 years of age who are normally resident in their area. In order to make this process as effective and informative as possible the four South West LSCBs (Cornwall & Isles of Scilly, Devon, Plymouth and Torbay) have agreed to a joint process, sharing resources and information to improve the quality of outcomes under the Peninsula CDOP. A joint child death overview protocol has been agreed and is adhered to by all agencies (see references). The child death review process is not a hospital or trust process. It is a CDOP process and is a multi-agency review of unexpected deaths (some of which will generate a local case review). The panel does not have an investigative role. Information is presented as an anonymised case file and all members are bound by strict, binding codes of confidentiality. The Director of Public Health, Plymouth or a nominated deputy chairs the meeting, and meets around five to six times a year. Its aim is to better understand how and why children die and to use the findings to make recommendations towards preventing other deaths and improving the health and safety of children.

10.5.2 The named doctor for the CDOP in Cornwall is a paediatric community consultant – but this role sits outside of and is not governed by the RCHT. His role is to coordinate the local CDOP process and chair the local case review.

## Commentary

*Due to the title of the Bristol final report (Child Death Review) and the name of the meeting, confusion and misunderstanding has arisen concerning this local mortality review meeting and the statutory CDOP review.*

*The Peninsula CDOP confirmed that a review of Coco's case would not take place until all other investigations have concluded and the information/reports undertaken by all agencies involved had been requested and received.*

### 10.6: Duty of Candour: CQC regulation 20

- 10.6.1 Duty of candour was introduced through the Health and Social Care Act 2008. It is currently governed by the Health and Social Care Act 2008 (Regulated Activities) Regulations 2014: Regulation 20. This statutory regulation came into force on 1 April 2015 and applies to all health and social care organisations registered with the healthcare regulator.
- 10.6.2 This regulation applies to organisations as opposed to individual members of staff. Individual members of staff who are professionally registered are separately subject to professional duty of candour, which is overseen by the professional regulatory bodies such as the General Medical Council and Nursing and Midwifery Council. (Regulation 20: Duty of Candour – information to providers - see references).
- 10.6.3 The regulation is to ensure that professionals and providers of care are open and transparent when things go wrong with care and treatment. This includes informing people about the incident, providing reasonable support, truthful information and an apology.

- 10.6.4 This regulation is not intended for circumstances where a patient's condition gets worse due to the natural progression of their illness. It applies when something goes wrong with a patient's care, and they suffer harm or distress as a result.
- 10.6.5 Organisations have a responsibility to ensure staff understand their duties and are supported through training and education to comply with the legislation. The trust policy that governed duty of candour in July 2017 was the 'Being Open and Duty of Candour Policy and Procedure' V1.5 published in November 2015.
- 10.6.6 Coco's parents have raised concerns that the trust has not complied with the duty of candour regulations.

### Commentary

*Duty of candour applies at the point it is established that something has gone wrong, or when it is suspected that something has gone wrong with a patient's care, and they have suffered harm or distress.*

*From the period 31 July 2017 through to early November 2017, the clinicians involved in Coco's treatment told the investigation team that they believed she had died from a potentially fatal condition, HLH. The death certificate also records 'Escherichia Coli 0157 associated with Haemolytic Uraemic Syndrome'.*

*All of these conditions (E.Coli, HLH and HUS) could have been considered natural causes and whilst the outcome tragically led to her death, duty of candour regulations would not have applied.*

*From early October through to early December 2017 further information started to emerge: Dr E's review of the case, the internal child death mortality review from BRHC, the mortality review from RCHT and the complaint allegations from Mr and Mrs Bradford. This information ranged from identifying opportunities to learn through to an assertion that there was a 'catalogue of errors'. During this time,*



*the duty of candour regulations did not apply because it had not been established that something had gone wrong.*

*In early December 2017 the trust's medical director met with Mr and Mrs Bradford and explained that he intended to commission an external review, to establish the facts of what happened and to identify opportunities to learn. This was the start of the duty of candour process; at this stage, the full facts were not known.*

*On 16 February the investigation commenced, with a six-month reporting deadline.*

*The trust's medical director met with Mr and Mrs Bradford on 3 August 2018 to provide them with an update on the progress of the independent investigation. He explained that the trust had got things wrong, more could and should have been done for Coco whilst she was in their care, and he made a full apology. This meeting forms part of the ongoing obligation under the duty of candour and it is anticipated there will be further discussions with the family on conclusion of the report of this investigation.*

*This has been a complex series of events. It is noted, however, that the family have been involved in the process and consulted at every various stage.*

## 10.7: Engagement with Mr and Mrs Bradford

10.7.1 Some of the engagement and communication with Coco's parents was at times poor and confusing. There were times when it lacked sensitivity for a family that were grieving for the sudden and unexpected death of their child. Mrs Bradford often had to make repeated requests for information and clarification.

10.7.2 Once Coco's parents were made aware that there was to be an investigation into their daughter's death, there continued to be confusion in terms of who was their single point of contact, and the progress of the investigation. Four different people confirmed to the family that they were the single point of contact. However, a total of eleven members of staff communicated directly with the family about the processes.

### Commentary

*These inconsistencies and delays led to a perception by the family that there was a cover-up and lack of transparency and openness about Coco's care at the Royal Cornwall Hospital.*

## 10.8: Summary of Quality Governance

*Whilst reviewing the trust's policies to inform this investigation, the investigation team observed that many of them were not up to date in line with current quality governance. The trust's serious incident processes should be strengthened, particularly around how 72-hour reviews are conducted.*

*The team observed that the complaint by Mr and Mrs Bradford was not well managed, and the trust's communication with them on how their allegations and concerns were to be investigated was not clear. The absence of single leadership or co-ordination in these two areas led to contradictory information and confusion about what was happening. Similarly, with access to records requests, there was a lack of communication in explaining reasons for delays.*

*From the evidence that the investigation team have been able to consider, the trust's approach to learning from mortality in paediatric care has been open and honest, and this was reflected in the minutes of the meetings the team reviewed.*

*The duty of candour was initiated by the medical director as soon as information became available from various sources suggesting that something may have gone wrong, including the allegations made in the complaint made by Mrs Bradford.*

*Engagement with the family has been varied and at times poor and confusing, and not always conducted with compassion and sensitivity.*

## Section 11: Conclusion

- 11.1 The death of a child under any circumstances is traumatic; when a child dies suddenly and unexpectedly these events are tragic and have long-lasting consequences for the parents and family. For those professionals who work in paediatric teams a patient's death is a significant and upsetting event and can have a profound effect on them.
- 11.2 Whilst it is impossible to state that Coco's outcome could have been different, there were numerous opportunities as identified in this report to alter her clinical management plan. This would have significantly increased her chances of survival.
- 11.3 Coco was diagnosed with gastroenteritis; however, her clinical management plan did not follow national guidelines for this condition.
- 11.4 With the benefit of hindsight it's possible to see how such missed opportunities might arise owing to a number of contributory factors. These ranged from systemic failures to outdated cultural norms. A primary contributory factor was the inadequate staffing resources to manage the patient cohort, coupled with poor understanding of the impact of patient acuity, and inadequate escalation planning. The consequence of never 'closing the doors' for paediatric in-patient services may lead to patient safety being compromised.
- 11.5 The investigation team gained the impression that in some areas of RCHT's paediatric service there was a lack of professional challenge, outmoded practice and lack of the development of modern nursing roles. There appears to be an inward-looking ethos regarding the

adoption of national best practice and involvement with regional networks to support good clinical effectiveness.

11.6 The report arising from the Care Quality Commission (CQC) inspection in July 2017, published in October 2017, identified serious concerns in the organisational governance systems. The investigation's findings detailed in this report found there were further opportunities to strengthen the quality governance processes and systems within the trust.

11.7 After Coco's death, when her parents were trying to establish the circumstances of her death, and raise questions and concerns about her care, the trust's response was uncoordinated and at times lacked sensitivity. There appeared to be a lack of timely, compassionate engagement with her parents to help them understand how their complaint and the subsequent investigation into their daughter's death was going to proceed.

## Section 12: Recommendations

- 12.1 The trust should urgently review the existing paediatric escalation policy and ensure that it demonstrates the ability to respond to capacity/demand issues, and takes account of patient acuity and clinical staffing levels. This should include definitive actions to be taken when the paediatric service are experiencing operational pressures i.e triage, stabilise and transfer
- 12.2 The trust should review the overnight paediatric staffing levels to ensure that there are safe staff-to-patient ratios in place.
- 12.3 The paediatric service should immediately review their use of clinical guidelines and ensure that they have a full suite of up-to-date guidance that is also implemented into daily clinical practice.
- 12.4 The paediatric team should review their involvement with regional paediatric clinical networks ensuring they maximise the opportunities provided by such networks.
- 12.5 The trust should urgently agree a policy for the care of children on ICU that is in line with the Paediatric Intensive Care Society guidelines.
- 12.6 The trust should undertake a review of the current PEWS system to ensure that it provides an accurate impression of the patient status.
- 12.7 The trust should consider the introduction of patient observation charts, which default to a cumulative or “trend” view to enable clinical oversight.

- 12.8 It is recommended that the trust ensure that they have a robust trust-wide annual audit programme. Findings from these audits should be reviewed and re-audited to ensure best practice is embedded within the organisation.
- 12.9 The trust should ensure that all staff involved in the care of a patient should follow professional standards in relation to the documentation of clinical records.
- 12.10 All patients who are admitted to the hospital with a learning disability should be considered for referral to the learning disability team for review and input.
- 12.11 It is recommended that the trust undertake an internal retrospective review of paediatric mortality data to assure themselves that all paediatric deaths have been reviewed appropriately in line with the NHS Serious Incident Framework guidance, 2015.
- 12.12 The trust should review its governance for paediatric mortality learning opportunities, including clarification on how the statutory Child Death Overview Panel process integrates with the internal trust process to ensure learning is embedded in the service.
- 12.13 The trust should fully implement The National Quality Board Learning from Deaths: Guidance for NHS trusts on working with bereaved families and carers, July 2018 – see references.

## Section 13: Appendices

The following appendices are provided in a separate volume.

- Appendix 1: Terms of reference
- Appendix 2: The investigation team
- Appendix 3: Documents reviewed
- Appendix 4: Clinical timeline
- Appendix 5: Clinical presentation tables
- Appendix 6: Observations
- Appendix 7: Blood and gas results
- Appendix 8: NICE Diarrhoea and Vomiting in Children
- Appendix 9: Fluid management elements
- Appendix 10: Electronic patient record (EPR) trend view
- Appendix 11: Quality governance timeline
- Appendix 12: Parents' questions
- Appendix 13: RCHT Guidelines for Intravenous Fluid Selection for Previously Well Children Aged 1 month to 16 years



## Section 14: References

1. Care Quality Commission 2017: Royal Cornwall Hospitals Trust, Quality Report, October 2017
2. Care Quality Commission regulation 20: Duty of Candour, March 2015
3. Care Quality Commission Supporting information and guidance: Supporting effective clinical supervision, July 2013
4. Care Quality Commission: Learning Candour and Accountability, December 2016
5. HM Government, Working Together to Safeguard Children (2013), updated in 2015 and July 2018
6. National Institute for Health and Care Excellence (NICE) pathway: for diarrhoea and vomiting in children, March 2016
7. National Quality Board: Learning from deaths: Guidance for NHS trusts on working with bereaved families and carers – first edition, July 2018
8. NHS England: Operational Pressures Escalation Framework (OPEL), October 2016
9. NHS England: Serious Incident Framework 2015, appendix 3: Independent Investigation (level 3), March 2015
10. NICE guideline 29: Intravenous fluid therapy in children and young people hospital, December
11. NICE guidelines 51: Sepsis: recognition, diagnosis, and early management (2016)
12. Paediatric Intensive Care Society Quality Standards, December 2015
13. Peninsula Child Death Overview: Including the multi-agency rapid response to unexpected deaths; protocols and working procedures (July 2016)
14. Royal Cornwall Hospitals NHS Trust (RCHT) Patient observation and monitoring child health policy, appendix 1: Paediatric Early Warning Score (PEWS), May 2016
15. RCHT Guidance for escalation criteria of critically ill children admitted to child health, February 2014
16. RCHT IV Policy, July 2017

17. RCHT Incident and Serious Incident Policy, April 2016
18. RCHT Patient and Service User Feedback Policy, December 2014
19. RCHT Being Open and Duty of Candour Policy, November 2015

## Section 15: Glossary of Terms

Term:	Definition:
72-hour report	A report completed within following a review within 72 hours of a patient safety incident being reported. Its purpose is to ascertain if the incident meets the criteria for a serious incident investigation
Acidosis	When the pH in the body has become more acidic
Clinically dry	Dehydrated, a deficit of total body water
Doppler	A blood pressure monitor which is placed distal to a cuff and is used like a stethoscope to detect the onset of blood flow as the cuff is deflated
Faeces	Solid waste matter passed from the bowels through the anus. Also called stools, bowel movement
FLACC	Face, Legs, Activity, Cry, Consolability scale (FLACC) is a measurement used to assess pain for children between the ages of 2 months and 7 years or individuals who are unable to communicate their pain
Gastroenteritis	Inflammation of the membrane lining the intestines and the stomach, caused by an infection and resulting in diarrhoea and vomiting
Handler	The Handler of an incident is someone designated to ensure that the findings of an investigation and any other relevant information are recorded in the investigation
Inotropes	Blood pressure medications
Local Neonatal Unit (LNU)	A level for care for babies who have a higher dependency and need short-term intensive care. Generally premature babies who are over 27 weeks gestation
Local resolution meeting	A meeting between the complainant and the NHS trust representatives with the aim of trying to resolve the complaint between the parties
Mucous membranes	Membranes that line various cavities in the body and cover the surface of internal organs e.g. inside the mouth
Neutrophilia	Raised number of neutrophils in the body
Pallor	Clinically pale
Pyrexia	Fever, a high core body temperature
Red flag	Used for signalling some particular problem requiring immediate attention
Renal failure	A situation in which the kidneys do not function properly (kidney failure)
Single point of contact	A person or a department serving as the coordinator or focal point of information concerning an activity or programme