QUEENSLAND COURTS

CORONERS COURT OF QUEENSLAND

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of Hunter, an eight year old boy**
TITLE OF COURT:	Coroners Court
JURISDICTION:	BRISBANE
DATE:	13/02/2023
FILE NO(s):	2020/1161
FINDINGS OF:	Ainslie Kirkegaard, A/Coroner
CATCHWORDS:	CORONERS: paediatric death, regional hospital; acute abdominal pain; Autism Spectrum Disorder (level 1); paediatric pain assessment; persisting and worsening vomiting; bilious vomitus; surgical admission to paediatric ward; failure to recognise and respond to clinical deterioration or parent concerns; lack of senior clinician oversight and input; premature closure and anchoring bias, inadequate nursing documentation (fluid balance chart, Children's Early Warning Tool – CEWT); Ryan's Rule; Root Cause Analysis (RCA); congenital band adhesion

These findings are published with the family's permission to identify Hunter and themselves by name.

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Background

Hunter was an eight year old boy who died unexpectedly at a regional hospital on 17 March 2020.

Hunter lived with his parents, Jodie and Daniel, and his older sister. At age 2, Hunter had received a diagnosis of level 1 Autism Spectrum Disorder (ASD) with developmental delays in his language and communication skills for which he received NDIS funded allied health services. He was in grade 3 at primary school supported by a teacher-aide. Jodie was a registered nurse employed at a local private hospital. Daniel was a stay-at-home dad and registered NDIS carer for Hunter.

Hunter's death was reported to the coroner because of the cause of his sudden, unexpected death was unknown. There were also concerns about failure by the treating teams to recognise and respond to clinical deterioration over the course of the hospital admission.

Events leading up to Hunter's presentation to the regional hospital emergency department on 15 March 2020

The family visited friends out of town over the weekend of 14-15 March 2020, returning home at around midday on Sunday 15 March. Hunter had a great time playing with the other children and didn't appear to be unwell while they were away. Jodie and Daniel left the children at home for about half an hour while they popped out for groceries. On their return, Hunter's sister told them Hunter had been complaining of a sore tummy, so she told him to have a shower.

Hunter complained of stomach pains again at around 3:00pm. Thinking he might be hungry, Jodie prepared some watermelon and strawberry flavoured milk, which he consumed. He continued to complain of stomach pain, so Jodie took him to the toilet. She noticed about two inches of black cotton protruding from his anus. Hunter had a tendency to bite and chew on his clothing and blankets which sometimes resulted in him ingesting and passing string or material in his stools. Jodie pulled gently on the cotton but felt resistance, so she told Hunter to push while she pulled on the cotton, but it snapped off. Hunter was unable to pass a bowel motion at that time. Jodie fixed him a hot water bottle and told him to lie down on the couch. Not long afterwards Hunter got up and ran outside to vomit.

Jodie phoned the Home Doctor service and was told they were too busy to attend. She and Daniel decided to take Hunter to the regional hospital emergency department, arriving there at around 5:30pm.

Hunter was initially triaged by nurse who gave him Ondansetron for his nausea. Jodie noted he was sick, pale and lethargic. He was then assessed by an emergency department doctor who noted Hunter looked uncomfortable and sweaty, though he was afebrile and his observations were within normal limits. His abdomen was soft with tenderness in the iliac fossae and suprapubically. The differential diagnoses at that time were bowel obstruction and appendicitis. The doctor ordered imaging with abdominal x-ray and ultrasound scan. The ultrasound scan revealed prominent mesenteric lymph nodes and a large loop of distended bowel. The ultrasound report queried the significance of these findings, and that further imaging may be beneficial to further evaluate possible bowel pathology. The abdominal x-ray was reported as showing faecal loading with no obvious small bowel dilation, but the formal x-ray report was not available at this time. Blood tests showed an elevated white cell count (16.8) and lactate 2.3. These findings were discussed with the surgical Principal House Officer (PHO) who also reviewed Hunter in the emergency department. The PHO observed Hunter looked pale and miserable. On examination, his abdomen was generally tender particularly

in the lower abdomen with some slight distension but no signs of peritonism. The PHO's impression was of constipation with possible obstruction, and dehydration. Following discussion with the surgical consultant, who also reviewed the abdominal x-ray images, Hunter was to be admitted to the paediatric ward under the surgical team for conservative management with trial fleet enema, analgesia, intravenous fluids and monitoring with 4-hourly observations. The need for CT scan was considered should Hunter's symptoms worsen. The surgical team was to be notified if Hunter's pain increased or his vital signs became abnormal.

Hunter was given two microlax gels rectally, but the gel came out straight away. He was then given a fleet enema. He passed two nugget sized solid stools, one of which had black cotton string in it. The other stool had approximately half a metre of black cotton within it. He was commenced on intravenous fluids.

Hunter was then transferred to the paediatric ward. Jodie stayed with him throughout the admission. She says the staff were aware she was a Registered Nurse.

Hunter's clinical management on the ward over 15-16 March 2020

Jodie recalls that overnight Hunter had short periods where he felt able to eat but could not keep anything down. He was very uncomfortable and unable to sleep soundly, which was unusual for Hunter.

Nursing staff contacted the ward call doctor overnight after Hunter had two bright green bilious vomits after getting up to go to the bathroom. The ward call doctor noted Hunter was reporting ongoing abdominal pain. He was haemodynamically stable. The ward call doctor contacted the PHO who came to review Hunter on the ward. The PHO noted Hunter's bowels had opened after the fleet enema, and documented that Jodie said Hunter was otherwise feeling better. His vital signs remained within normal limits. On examination his abdomen was soft but tender in the lower quadrant. The PHO ordered urinalysis and urine culture.

During the surgical ward round the following morning, Monday 16 March, it was noted that Hunter's bowels had opened after the fleet enema, passing string and faeces, his observations were stable, he was nauseous, looked tired and was resting in bed. Repeat blood tests showed some improvement. He was for clear fluids, a further fleet enema and to be reviewed by the paediatric team for *"?ASD vs eating string".*

Jodie recalls Hunter couldn't tell the doctors specifically where his stomach was hurting. She says a nurse asked the surgical team for a CT scan but this was declined.

The paediatric team was contacted but indicated inpatient review was unnecessary and for Hunter to be reviewed as an outpatient.

A nursing entry made at 2:45pm that day noted Hunter was miserable, at times complaining of 4/10 abdominal pain which settled with paracetamol and ibuprofen. He had tolerated some water and half-strength apple juice. He was administered a paediatric dose of fleet enema "*with good effect*" described as "*large faecal fluid (brown) motion*". He was wearing a nappy. He was given ondansetron after a 300ml bile-stained vomit. His observations were stable.

When reviewed by the surgical team that afternoon, Hunter was noted to have vomited once, have ongoing nausea and had slept most of the day. Jodie was told his repeat blood tests were improving. Hunter was asleep during the review. His abdomen was noted to be soft, with minimal tenderness. He was assessed as stable and upgraded to regular diet with the aim of discharge home the following day with referral for outpatient paediatric review.

Jodie recalls Hunter was feeling a bit better and was able to eat. She phoned Daniel to ask him to bring up some of Hunter's preferred food and drink. She and Hunter walked to the nurses station to ask whether they could meet Daniel at the front of the hospital. They were told they could so long as Hunter wore shoes. He was barefoot at the time, so they walked back to his bed for his shoes. Hunter complained of severe stomach pain which caused him to bend over. Jodie pressed the call bell and informed nursing staff who suggested they don't walk anymore and told Jodie there was nothing more they could give Hunter for pain.

Daniel brought Hunter some watermelon, strawberry Quik and Fruit Loops that afternoon. He ate a small piece of watermelon and drank approximately 150ml of the strawberry milk.

That evening Hunter tolerated oral fluids but refused food. He was noted to have vomited three times and had two episodes of loose bowels. He continued to require pain relief. By 9:45pm, Hunter had vomited again and was no longer tolerating fluids. He looked uncomfortable and vomited after he was given nurofen at 9:30am. Nursing staff paged the ward call doctor who came to review Hunter within the following hour.

Jodie recalls Hunter was very uncomfortable that night, thrashing around in the bed, moving from one side to the other due to the pain. He wanted to sleep with Jodie but within minutes became too uncomfortable and returned to his bed. He was unusually restless.

The ward call doctor spoke with Jodie who reported Hunter had had 30 small volume vomits "*not bilious*" and ongoing abdominal pain with diarrhoea ++. Jodie is documented as feeling Hunter was worse than when he was reviewed by the surgical team that afternoon. His observations were stable. On examination, there was voluntary guarding of the abdomen, and Hunter was saying it sore even at light touch but unclear to the ward call doctor whether it was actually tender. There was no distension and bowel sounds were present. Jodie says she told the ward call doctor Hunter was admitted for a query bowel obstruction and the doctor told her she would refer the matter to the senior surgical doctor.

The ward call doctor contacted the surgical PHO (PHO-2) who reviewed the abdominal x-ray and advised "*not likely obstructed*" and recommended intravenous fluids and ondansetron. PHO-2 came to review Hunter on the ward some time prior to 1:00am (Jodie recalls this happened at around 10:30pm) noting Hunter's ongoing abdominal pain, nausea and vomiting. On examination, the abdomen was soft but diffusely tender with no guarding or signs of peritonism. PHO-2 thought obstruction was unlikely as Hunter's bowels were moving and queried whether the abdominal pain and tenderness was secondary to constipation and the enemas. PHO-2 queried viral illness as a possible cause for the nausea and vomiting. PHO-2 advised that Hunter could return to a full diet (small amounts slowly) and was to continue on intravenous fluids, analgesia and anti-emetics. Jodie says she asked PHO-2 if Hunter could have more anti-emetics and pain relief and although the doctor agreed, the extra medications were not charted. Nursing staff reportedly questioned the need for a nasogastric tube but were told it was unnecessary as Hunter did not clinically appear to be obstructed.

A nursing entry made at 3:50am noted Hunter was awake most of the night with small vomits/possets. He was recommenced on intravenous fluids and received intravenous paracetamol.

Jodie says she kept flagging with staff that something was not right with Hunter. His vomiting continued through the night. It looked like bile. Jodie was messaging Daniel throughout the evening and into the night expressing concern about Hunter's ongoing vomiting and tummy pain, worried he was not getting any better. She told him she felt "*like everyone is getting the shits with me because Hunter is sick*". She told him Hunter could not tolerate anything and was vomiting up everything he took in. She had thought he would be getting better by now, but he was no better and she just felt like "*I'm being that dramatic parent who is worrying about*

nothing".

The events of Tuesday, 17 March 2020

Jodie recalls Hunter vomited a black substance at around 4:00am, Tuesday 17 March. She says the nurse thought this could have been from the watermelon and strawberry milk Hunter had consumed 24 hours earlier.

Nursing observations performed at 5:45am that morning recorded Hunter's heart rate was elevated at 137, meaning he scored 1 on the Children's Early Warning Tool (CEWT). This tachycardia and the overnight reviews were communicated at the nursing and medical clinical handovers.

It was noted at the surgical ward round that morning that Hunter had been nauseous overnight with ongoing frequent vomiting and Jodie had told them he had abdominal pain all night with no relief from analgesia and anti-emetics. He was noted to be tachycardic, pale and miserable. His abdomen was diffusely tender. The surgical team ordered repeat abdominal x-ray.

The abdominal x-ray was performed at around 8:30am. Imaging showed gas-filled loops of bowel in the upper abdomen and paucity of gas in the mid-lower abdomen. There was no evidence of pneumoperitoneum. It was felt this x-ray was better than the previous imaging.

Jodie says Hunter continued to vomit every minute. At around 9:00am, he had some strawberry milk but vomited it back up straight away. He was lethargic.

At 9:30am an urgent paediatric review was requested when nurses and junior members of the surgical team reported that Hunter was looking "unwell". Hunter was afebrile, tachypnoeic and tachycardic with a CEWT score of 4. He was reviewed by the paediatric Registrar and resident medical officer at 9:45am. Jodie recalls there were approximately 20 doctors present during this review and the paediatric doctor told her words to the effect of "*Don't worry Jodie about all these doctors here, they are here so we don't miss anything*."

It was noted that Hunter's nausea and vomiting had become worse at around 10:00pm the previous evening, having vomited a total of 1.5L overnight and was now vomiting brown/black vomitus that smelt like faeces that morning. He was not tolerating any oral intake. Hunter was noted to be pale, peripherally cold with blue lips, mottled and lethargic but responding to questions. His observations were abnormal with an elevated respiratory rate (44), heart rate (170) and blood pressure (103/56). On examination, the abdomen was tender on the left side with percussion tenderness and no bowel sounds. The repeat abdominal x-ray had showed faecal loading but no obstruction. The paediatric Registrar documented the clinical impression as *"..severe dehydration & shock in the setting of ongoing vomiting on a [background] of possible bowel obstruction (clinically) in the context of string ingestion."* The paediatric Registrar recommended further blood tests, venous blood gases, aggressive fluid resuscitation and surgical review for possible obstruction.

Jodie says she asked the team during this review whether they thought Hunter had a bowel obstruction; they said they didn't think so. She told them that Hunter's vomit smelt like poo, and one of the female doctors disagreed saying words to the effect of *"I look after a lot of patients with bowel obstructions and Hunter's vomit does not look like faecal matter*". Jodie told her "*it smells like poo*" and offered to show the doctor what was in the vomit bags but the doctor declined. Jodie says she also asked whether a CT Scan would be conducted, and was told that "at this stage *we won't be doing one due to the risk of radiation to children. We only complete CT scans when really necessary"*. During the conversation the paediatric doctor was performing an ultrasound on Hunter's arm to obtain another intravenous access. Jodie

was told this would hurt and Hunter might struggle. Jodie expressed doubt he would because he was so lethargic. She recalls the doctor asking if this was normal for Hunter; she told the doctor it was not.

Venous blood gas results indicated Hunter was acutely unwell.

A retrospective nursing entry made at 2:30pm that day noted Hunter was vomiting moderate amounts of faecal smelling fluid at 9:00am, resulting in nursing staff urgently paging for medical review. His CEWT score was 7 and he was commenced on supplemental oxygen via Hudson mask. He was then moved closer to the nurses station. At 10:10am Hunter was tachycardic. Nursing staff applied ECG dots and commenced him on telemetry.

At around 11:00am Jodie, Daniel and a nurse gave Hunter a bed bath because he had vomited on himself. He was cold and the nurse struggled to get an oxygen saturation level from him. He was not on supplemental oxygen because he had been vomiting. He said he wanted to go home because he felt better.

Shortly before 11:45am, Hunter suddenly turned grey, his lips were blue, his eyes sunken and his torso was mottled. He deteriorated acutely with hypotension and desaturations. There were two senior nurses in the room at this time. Hunter started vomiting a large amount of faecal smelling vomit from his mouth and nose (approximately 1L) and then became unresponsive. A Code Blue was activated but despite prolonged emergency resuscitation efforts with a brief return of spontaneous circulation after 30 minutes, Hunter was unable to be revived. He was declared deceased at 12:46pm on 17 March 2020. It was thought Hunter had suffered a bowel perforation with associated aspiration.

Autopsy findings

External examination including CT scan and partial autopsy (chest and abdomen only) were performed at the John Tonge Centre on 23 March 2020. Autopsy revealed a 3.5cm ileo-ileal congenital band adhesion. The small bowel distal to this was strangulated and twisted within the band adhesion with associated demarcated haemorrhagic necrosis (infarction) of the terminal ileum. There were two smaller band adhesions within the same region, each measuring approximately 0.5cm. There was no evidence of perforation, peritonitis or acute appendicitis. There were also bilateral pleural effusions and ascites. Having regard to these findings, the pathologist determined the cause of death to be ischaemic bowel due to strangulated small bowel obstruction as a consequence of congenital bowel adhesion.

Congenital band adhesion is a very rare condition with most clinically manifesting in children under 12 months of age. It can present with mild symptoms ranging to the extreme of bowel strangulation. Small bowel obstruction occurs when an intestinal loop is trapped underneath the band. I note that definitive diagnosis is difficult because there is no specific test to diagnose the condition. If clinically suspected, the standard test would be to perform an upper gastrointestinal series with oral contrast.

Family concerns

Hunter's family expressed significant concern about the apparent failure by his treating teams to recognise and respond to his clinical deterioration despite Jodie voicing her concerns numerous times to the nursing, surgical and medical staff involved in his care. She says she was not made aware of Ryan's Rule or told how to escalate her concerns. At the time of Hunter's death, Jodie was a practising Registered Nurse trained in acute surgical patients, orthopaedic, ENT and general surgical nursing working at a local private hospital, and not familiar with Ryan's Rule. The family also felt the surgical team did not have enough training

in looking after children with autism and did not appear to appreciate that children with autism do not respond to pain in the same way as children who are not neurodivergent; rather the surgical team kept telling Jodie that Hunter did not have enough pain to have a bowel obstruction or that he could not tell them exactly where he was experiencing the pain.

Hospital & Health Service clinical review outcomes

Soon after Hunter's death the relevant Hospital & Health Service commissioned a root cause analysis (RCA) of the care Hunter received during his admission. This is a systemic analysis of what happened and why and is designed to make recommendations to prevent adverse health outcomes from happening again, rather than to apportion blame or determine liability or investigate an individual clinician's professional competence. It is conducted by a review team who had no involvement in the patient's care.

I note the RCA team included content experts and Hunter's family was invited to participate in an interview as part of the review process.

The final RCA report was provided to the coroner on 23 June 2020.

The RCA team:

- considered there was a comprehensive assessment and appropriate investigation of Hunter's presentation in the emergency department;

- agreed with the initial conservative management plan including fleet enema, intravenous therapy, anti-emetics, analgesia and to remain nil by mouth, with consideration of abdominal CT scan if Hunter's condition worsened – the expert team members considered the white cell count and lactate were marginally elevated and most likely caused by physiological stressors of vomiting and pain. It was reasonable not to commence Hunter on antibiotic therapy at this time;

- agreed that an abdominal CT scan was not clinically indicated on the morning of Monday 16 March as Hunter appeared to be clinically improving – it was considered that given Hunter appeared to improve after opening his bowels and passing the cotton string and material following the fleet enema, surgical consideration of a high small bowel obstruction at that time would have required extensive knowledge and been an "*extraordinarily astute call given the rarity of the condition*". It was recognised that diagnosing strangulation resulting from small bowel obstruction is challenging per se, particularly given Hunter was reviewed by clinicians from a general surgical team and not a specialised paediatric surgical team;

- noted that while repeat blood tests that morning showed a drop in Hunter's white cell count, no repeat lactate was performed, and his urine/creatinine level remained elevated at 138 – the RCA team discussed how repeat lactate level testing at that time may have revealed a worsening lactate level indicating perfusion abnormalities or an emerging sepsis. It was noted that lactate levels can increase with ischaemic bowel but only if there is venous return from that ischaemic bowel. Where there is complete gut vascular occlusion, lactate levels are often normal. For this reason, the RCA team could not say whether a repeat lactate on 16 March would have advanced the diagnosis at that time;

- observed that documentation regarding the nature, frequency and volume of Hunter's vomitus overnight on 16-17 March was unclear – it was considered this, along with premature closure and anchoring biases, likely led to an under appreciation of the significance of Hunter's vomiting and precluded clinical escalation;

- observed pain assessments were not consistently performed in conjunction with routine observations or undertaken regularly to assess Hunter's response to pain relief – the RCA team recognised it was difficult to clinically assess or obtain history from Hunter due to his ASD associated sensory and language comprehension and responses. The team acknowledged how children with developmental disorders manifest pain differently and are often unable to self-report pain or pain intensity making them vulnerable to inaccurate pain assessment. For this reason, standardised pain assessment tools are ineffective for these children who have very individualised responses. It was recognised that partnering with the child's parents/carers is critical in helping recognise and understand the child's behavioural cues including how the child expresses pain, what is their normal behaviour and how to identify and respond to behavioural change that might indicate the child is unwell. The RCA team noted Hunter's parents' "*strong presence and involvement'* during his admission. It was observed that information about Ryan's Rule was discussed with and made available to Jodie as a routine component of Hunter's admission process;

- expressed concern that although Hunter's tachycardia and CEWT score of 1 and the overnight reviews were communicated at handover the following morning, Tuesday 17 March, a primary survey and set of vital signs were not undertaken in accordance with the nursing standard for clinical assessment of the paediatric patient – with the benefit of hindsight, it was felt that a set of vital signs together with an individualised assessment taken at handover or soon after when Hunter was pale, lethargic and tachycardic, may have prompted an earlier response in detecting his deterioration. It was noted the Registered Nurse allocated to Hunter at that time was unfamiliar with the paediatric unit, also assigned to care for three other children and busy with competing priorities for children who were being prepared for surgery. Nursing staffing was confirmed to be in accordance with nursing staff:patient ratios but the nursing care was task-focused meaning there was a loss of situational awareness to the gravity of what was happening for Hunter;

- identified Hunter's tachycardia as indicative of clinical deterioration, increasing distress and dehydration;

- observed that fluid intake, ongoing losses and urine output quantification were not accurately or consistently recorded and described on Hunter's fluid balance chart. Once admitted to the ward, there was no documentation or clinician recollection as to how his hydration status had been reassessed, measured or monitored – the RCA team considered that poor documentation compromised Hunter's care as the cumulative effect of fluid deficits went unrecognised and consequently there was delayed and insufficient fluid volume resuscitation in a severely dehydrated child. The absence of a requirement for strict fluid balance led to under-recording/reporting and under-appreciation of the volume and nature of Hunter's vomiting and this in turn influenced the decision not to place a nasogastric tube (which might have prompted more accurate recording of his fluid losses). There was no consideration that persistent and worsening vomiting needed comprehensive clinical reassessment and more extensive investigations;

- noted there was limited nursing team leader involvement and oversight in response to the Registered Nurse's clinical concerns about Hunter;

- observed that when reviewed in the early hours of 17 March, Hunter's history, physical examination, laboratory results and imaging were not correlated with his response to physical assessment, hydration status and behavioural changes – there was no re-exploration of the possibility of bowel obstruction in the context of Hunter ingesting

cotton material and no consideration of sepsis in a now acutely unwell child;

- considered that a discussion with a surgical consultant overnight on 16-17 March may have assisted;

- considered whether an abdominal CT scan might have detected the intra-abdominal pathology in the early hours of 17 March – it was acknowledged that vomiting would likely have led to upper bowel decompression meaning a transition zone may not have been detectable at that time. A CT with oral contrast or an upper gastrointestinal contrast series were both considered more likely to have detected the rare congenital band adhesion but would only have been requested if this rare diagnosis was under consideration. For this reason, the RCA team could not reliably determine whether doing a CT scan (with or without contrast) overnight or in the early hours of 17 March would have changed the outcome for Hunter;

- observed that Hunter's next set of 4-hourly nursing observations were due at time when he was off the ward for the repeat abdominal x-ray meaning the severity of his illness and clinical deterioration was not recognised and no request was made for the repeat x-ray to be performed at the bedside;

- observed that the nursing observations performed at 10:10am were not added and scored – it was acknowledged multiple interventions and care activities were happening concurrently at this time and members of the both the paediatric and surgical teams were present but a Code Blue was not activated as it should have been, because the observations taken had they been scored at the time, brought his CEWT score to 9 – this was a missed opportunity for earlier intervention;

- questioned the surgical team's impression during the multidisciplinary review that morning that bowel obstruction was excluded after they visually reviewed the repeat abdominal x-ray images – it was noted this impression was made despite 1.3L vomitus recorded on the fluid balance chart and parental concern for faeculent vomiting. The formal x-ray report which became available after Hunter's death included " *a non specific bowel gas pattern, an obstruction difficult to exclude and an ultrasound or CT should be considered for further evaluation*." The RCA team concluded that the possibility of bowel obstruction was considered but excluded based on the surgical team's presumption that faecal loading due to constipation was driving Hunter's abdominal pain and vomiting, and once he had moved his bowels, there was "premature closure" to the possibility of any other intra-abdominal pathology causing his ongoing symptoms;

- noted there was discussion between the paediatric and surgical teams regarding the venous blood gas results (ph 7.04 and lactate 9) at 10:30am during which the paediatric team raised further concern about intra-abdominal pathology. The surgical consultant was in the operating theatre and being kept informed of events as they occurred. The surgical consultant considered other causes for deterioration and planned to review Hunter after the surgery was finished. This is when Hunter was moved to a room closer to the nurses station for increased visual observation – the RCA team considered that by this time the cascade of deterioration was most likely irreversible;

- observed there was no conjoint or concurrent discussion by the surgical and paediatric consultants at any time during Hunter's admission; rather there was reliance on information verbally communicated by members of the treating team to their consultant;

- observed that established processes for communicating, calling for assistance and escalating clinical concerns were not followed within and between disciplines;

- noted Hunter was agitated so continuous observation monitoring was commenced with the focus of care directed towards not overwhelming him; and

- considered the Code Bule was managed proficiently.

In conclusion, the RCA team identified there was a delay in recognising the emerging clinical symptoms of a small bowel obstruction, and failure to recognise deterioration in an acutely unwell child as there was no correlation of Hunter's history, physical examination, laboratory results and images with physiological observations, pain assessment and hydration status. It was evident there were elements of anchoring bias (reliance on initial information and impressions and not adjusting from this despite new information) and premature closure by the surgical team who discounted bowel obstruction on the presumption of faecal loading due to constipation in the context of Hunter having ingested cotton material. There was a fixative error/anchoring bias on the fact Hunter has passed the cotton material, imaging did not demonstrate a bowel obstruction, his bowels were opening, bloods initially improving and there was a plan for discharge. It was concerning that Hunter's persistent vomiting and medical reviews overnight on 15-16 March did not increase the index of clinical suspicion and consideration of the need for discussion with and assessment by a more senior surgical clinician and/or earlier paediatric team involvement. There was a notable absence of direct senior clinician (medical and nursing) oversight, involvement and support meaning the staff skill level and experience did not match Hunter's clinical care requirements. The totality of Hunter's evolving symptoms (worsening appearance, increased vomiting, persistent and unresolved abdominal pain, increased fluid losses, restlessness, unexplained tachycardia) were underappreciated when Hunter was critically unwell and did not flag the need for urgent clinical reassessment, increased frequency of observations or review of hydration status.

The following recommendations were made to address the issues identified by the RCA:

1. ***Develop a Paediatric Acute Abdominal Pain Pathway for nursing and medical staff which is to be used in all facilities in this health service***

   As at 4 November 2022, the HHS had adopted the Children's Health Queensland – *Acute Abdominal Pain – Emergency Management in Children* guideline and developed a local procedure *Paediatric – acute abdominal pathway* to provide prompts for clinicians to identify, if present, (a) medical red flags (b) surgical red flags and (c) red flags (Medical/Surgical) to inform the level of action required and time frame for response. The new acute abdominal pain pathway is supported by a Radiation and Medical Imaging factsheet designed to inform patients/families/carers of radiation, risks of exposure, imaging modalities and questions for the patient/family/carer to consider when undergoing imaging.

2. ***Determine the requirements for and develop a shared Model of Care for paediatric inpatients***

   I am advised that all paediatric patients presenting with an abdominal complaint at th regional hospital are now referred to the surgical team.

   The Director of Surgery issued a memorandum to all regional hospital Surgical (consultants, Registrars and PHOs) on 24 June 2021 outlining the requirement for a surgical consultant to review all emergency paediatric admissions within 24 hours. If this is not able to be achieved, the care should be transferred to another consultant able to do so.

A paediatric close observation unit has been established to support the paediatric patients who require a level of care between acute and intensive care. The *Paediatric close observations procedure* details the processes for patient inclusion and the provision of safe and effective care through increased observations, modified staffing and clear escalation pathways.

Multidisciplinary links have been strengthened with Queensland Children's Hospital to support best practice and inform clinical decision-making for complex cases as well as through attendance of education and training programs facilitated by Children's Health Queensland focusing on clinical observation and response to emergencies as well as preparation for retrieval in medical emergencies.

3. Develop and implement a process for paediatric fluid balance management and monitoring

I am advised an online Paediatric Fluid Balance Chart training package has been developed for completion by all clinicians working in the paediatric ward at the regional hospital. This is also outlined in the role specific mandatory training matrix for enrolled nurses, registered nurses, registered midwives and nurse practitioners working within paediatrics at the regional hospital. The *Paediatric – Fluid balance chart* procedure outlines the requirements for commencing, documenting and monitoring fluid balance of paediatric patients.

Records from the Learning Development Unit demonstrate good compliance with 91% of permanent staff having completed the training as at 4 November 2022.

4. Develop and implement model specific to the paediatric unit to address professional accountability and clinical escalation responsibilities underpinned by supportive leadership [in nursing and medical]

The HHS has implemented a Paediatric RN Clinical Performance Assessment Tool (CPAT) supported by a 12-month development pathway that a registered nurse undertakes working in the Paediatric ward at the regional hospital. The *Paediatric: RN Clinical Development Pathway requires* completion of the Children's Early Warning Tool education package and OPTIMUS Core training, which includes the recognition and management of the deteriorating paediatric patient. I am advised that completion of CPAT training will continue to be audited to ensure it is meeting the training requirements of Registered Nurses to safeguard ongoing best outcomes for paediatric patients.

A *General surgery professional practice framework* has been developed to provide support and guidance for Resident Medical Officers, Principal House Officers and surgical registrars. It outlines the agreed communication requirements when caring for paediatric surgical patients. All incoming junior doctors receive training to support the recognition of the deteriorating, unwell and critically unwell patient as well as awareness of the procedure and processes regarding escalation to ensure clinical concerns are actioned according to the *Clinical concern escalation procedure*. At the commencement of each Resident Medical Officer rotation, incoming RMOs receive specialty specific orientation that includes the provision of information regarding the escalation processes for clinical concerns.

5. Commit to the implementation of the Statewide Paediatric Sepsis Pathway

I note the HHS has been an active member of the Statewide Paediatric Sepsis

Collaborative since late 2020 and has since implemented the paediatric and adult sepsis pathways to facilities across the health service, including the regional hospital.

6. ***Develop and implement a Paediatric Nursing admission tool for children with developmental disorders***

   The HHS developed a *Special considerations for autism, intellectual disability and like conditions* tool in consultation with the paediatric nursing team and Nursing Education Unit. The tool provides a guide for assessment of pain and supports nursing staff to seek assistance and guidance from family/carer informed diversion strategies and identify specific health needs the child may have in relation to their developmental disorder.

Open disclosure meeting with Hunter's parents

Jodie and Daniel attended an open disclosure meeting with the hospital on 26 August 2020. It was an opportunity for the hospital to acknowledge the family's profound loss and discuss their concerns about consumer awareness of Ryan's Rule and staff training in looking after children with autism.

Jodie remains adamant she was not told about or given any explanation or information about Ryan's Rule. She feels those caring for Hunter knew she was a Registered Nurse and assumed she knew about it notwithstanding that Ryan's Rule is not used in the private hospital where she was working.

I am advised that communication of the Ryan's Rule pathway is an ongoing focus for the regional hospital and more widely across the HHS. Poster and pamphlets regarding Ryan's Rule are displayed across the hospital as well as being contained within the "Help us care for you" brochure which staff provide to families of paediatric patients on admission to the ward. Despite information being provided, the HHS understands that further support is required to assist families to escalate their concerns and to support clinicians to act in response. Staff currently receive training in clinical escalation, Speaking up for Safety, and the Ryan's Rule. This training is supported by *Escalation of care response (Ryan's Rule) enabling a patient, family and carer to initiate and escalation call* and *Clinical concern escalation* procedures.

Independent expert review and opinion

The coronial investigation has been informed by independent review and opinion from consultant paediatric physician, Dr Lambros Halkidis who reviewed the patient records, autopsy report and RCA report with reference to the family's concerns. Dr Halkidis oversees the Cairns Hospital emergency department paediatric program.

Dr Halkidis confirmed that congenital adhesion bands are rare and can present at any age but most commonly in young children.

He explained the general approach to managing paediatric patients requires a great deal of observation and careful consideration of clinical investigations. This should be driven by the admitting consultant with close communication with other team members (medical and nursing). He considers children like Hunter who are admitted to hospital under non-paediatric specialty teams have better experiences and outcomes when the paediatric medical team is involved in their care.

Dr Halkidis identified the absence of senior clinical decision making after Hunter left the emergency department as leading to junior members of the treating team not considering

alternative diagnoses, dismissing the possibility of bowel obstruction and dismissing Jodie's concerns. The junior doctors who reviewed Hunter due to nursing concerns about his bilious vomiting, did not consider it be bilious and did not appear to have communicated this back to the surgical consultant on-call. Dr Halkidis identified the possibility of bilious vomiting as a cause for concern requiring further investigation as bilious vomiting suggests potential intestinal obstruction until proven otherwise. He considered this to be a significant lapse in care which if acted upon could have changed the outcome for Hunter.

Dr Halkidis believed that while an abdominal CT scan may not have been diagnostic of a congenital adhesion band, there was a high likelihood it would have uncovered radiographic abnormalities (in addition to the plain x-rays) that would have raised suspicion for an alternative diagnosis, for example, angulation of the bowel, ischaemic changes of the bowel or dilated bowel, which could have changed Hunter's clinical course. Dr Halkidis acknowledges this is speculative but considers abdominal CT scan to be standard care for an undifferentiated abdominal complaint.

Dr Halkidis reinforced the vital importance of listening to and taking on parental concerns for paediatric patients. It was clear to him that Jodie felt not listened to and the treating team did not appreciate her concerns despite her efforts to communicate them. In Dr Halkidis' experience, the parents of children with medical conditions are very knowledgeable about their child's condition.

Dr Halkidis considered the impact Hunter's ASD may have had on his clinical management, noting Hunter was diagnosed with ASD Level 1, generally regarded as the mildest form with children typically having problems with communication, planning and organising and often characterised by poor expression/verbalisation of pain. Dr Halkidis considered the surgical team's assessment was challenging, complicated by Hunter's ASD and inability to describe his pain which appears to have given the surgical team a different clinical impression. Pain is a major factor in assessing abdominal pain, especially from ischaemic bowel, and while it was not absent in Hunter, he was likely to express the pain differently than a child of the same without ASD. Dr Halkidis identified this as where an experienced surgeon would make a difference and recognise the clinical presentation was not what it was initially thought to be. Further, he considered paediatric input could have assisted in evaluating Hunter by providing expertise in autism. However, while the fact of Hunter's ASD made the diagnosis more difficult, Dr Halkidis considered there was enough clinical history throughout the course of Hunter's admission and parental concern to suggest an alternative pathology needed to be considered.

Dr Halkidis supported the RCA findings and recommendations.

Findings required by s.45

Identity of the deceased – Hunter [de-identified for publication]

How he died –

Hunter died from complications of a rare form of congenital abdominal pathology after presenting to a regional hospital emergency department on 15 March 2020 with abdominal pain, vomiting and constipation in the context of having ingested cotton material which his mother had seen protruding from his anus that afternoon. He had been diagnosed with Autism Spectrum Disorder Level 1 at age 2, which caused delayed speech and communication development. This meant he did not express pain in the same way that would be expected of other children his age, and his language delays meant he could not describe his symptoms very well.

Hunter was comprehensively assessed and investigated with blood tests, imaging (plain abdominal x-ray and abdominal ultrasound scan) and surgical review to investigate possible bowel obstruction. The imaging was informally reported as showing faecal loading but no obvious bowel obstruction. The clinical impression was of constipation with possible obstruction, and dehydration. Following discussion with the surgical consultant, who also reviewed the abdominal x-ray images, Hunter was to be admitted to the paediatric ward under the surgical team for conservative management with trial fleet enema, analgesia, intravenous fluids and monitoring. The need for CT scan was considered should Hunter's symptoms worsen. Hunter passed two solid stools containing cotton thread and material after a fleet enema was administered in the emergency department. He was then transferred to the paediatric ward. He was accompanied by his mother Jodie who remained with him throughout his admission. Jodie was a practicing Registered Nurse working with adult patients in a local private hospital. This was made known to the medical, surgical and nursing staff looking after Hunter.

Despite some initial improvement after opening his bowels, Hunter's condition did not improve. He was experiencing persisting abdominal pain and increasing vomiting, requiring multiple medical reviews overnight on 15 and 16 March. Despite Jodie's repeated efforts to advocate for her son, her concerns that something was not right were not acted on with reassessment and further clinical investigations, as the junior surgical team remained focused on constipation as the underlying cause of Hunter's symptoms. While the possibility of bowel obstruction was actively considered while he was in the emergency department, it was effectively dismissed by the junior surgical team who appear to have been reassured by and anchored to the imaging, improving blood test results and the fact Hunter had opened his bowels and passed stools containing foreign material. Poor documentation of Hunter's fluid intake, fluid losses and vomitus meant the extent and significance of his increasing vomiting was under-appreciated by those caring for him. There were missed opportunities for junior members of the surgical team to discuss Hunter's persisting abdominal pain and increased vomiting overnight with the surgical consultant on-call on both 15 and 16 March. Had this occurred, it may possibly have led to senior clinician review and reassessment of bowel obstruction or other intra-abdominal pathology as the explanation for his symptoms, and active consideration of abdominal CT scan which may potentially have identified pathology to prompt further specialist investigations or exploratory surgery. The paediatric team initially declined the surgical team's request to review Hunter regarding his ADS, advising this should occur as an outpatient. This meant he was not medically reviewed by the paediatric team until he became obviously unwell on the morning of 17 March by which time the situation had become irretrievable. Failure to score Hunter's observations on the Children's Early Warning Tool on the morning on 17 March led to delay in activating a Code Blue when his clinical condition started deteriorating acutely after morning surgical ward round. This constellation of issues led to a delay in diagnosing intra-abdominal pathology and failure to recognise and respond to his clinical deterioration over the course of 16-17 March 2020.

The congenital abdominal pathology that ultimately caused Hunter's death is a rare condition in children his age and difficult to diagnose without a high index of clinical suspicion. However, I accept independent paediatric expert opinion that while Hunter's autism complicated the surgical team's assessment of his persisting symptoms despite having opened his bowels, there was clinical information coupled with repeated parental concerns that should have prompted the junior surgical team to seek surgical consultant input as early as the night of 15 March. Instead, they remained anchored to finding of faecal loading on abdominal x-ray and the fact Hunter had opened his bowels without reassessing his evolving clinical presentation and considering alternative diagnoses. Earlier senior paediatric review and input would have at the very least optimised the care he received over the course of 16 March. The lack of senior surgical and paediatric oversight, review and management was a significant missed opportunity

to have further investigated and diagnosed the evolving intra-abdominal pathology sooner and may potentially have changed the outcome for Hunter.

I am satisfied the Root Cause Analysis was an appropriately content expert informed and comprehensive assessment of Hunter's care and identified the constellation of clinical management and decision making deficiencies that deprived Hunter of senior surgical review and input which may have led to earlier diagnosis and intervention for his evolving intra-abdominal pathology. I consider the Hospital & Health Service to have taken appropriate steps to implement clinical guidelines and pathways for managing paediatric patients with acute abdominal pain and/or with developmental disorders, mandate early senior surgical review of paediatric emergency patients, establish a paediatric close observation unit and improve compliance with paediatric fluid balance monitoring, documenting clinical observations and clinical escalation.

The circumstances in which Hunter died reinforce the vital importance of treating teams listening to and acting on parental/family/carer concerns about a paediatric patient and the continuing need for health services to actively promote Ryan's Rule as a means by which parental and carer concerns can be escalated. No parent or carer who knows their child best, let alone one with current clinical training and knowledge, should ever be left feeling like they are being *"that dramatic parent is who is worrying about nothing*".

Place of death – [Regional hospital]

Date of death– 17/03/2020

I close the investigations.

Ainslie Kirkegaard
A/Coroner
CORONERS COURT OF QUEENSLAND