QUEENSLAND COURTS

CORONERS COURT OF QUEENSLAND

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of nearly 16 month old girl, LM**
TITLE OF COURT:	Coroners Court
JURISDICTION:	BRISBANE
DATE:	04/05/2018
FILE NO(s):	2016/3529
FINDINGS OF:	Ainslie Kirkegaard, Coronial Registrar
CATCHWORDS:	CORONERS: infant death; Group A Streptococcus; impetigo; management by multiple general practitioners; regional private hospital presentation; failure to recognise and response to paediatric sepsis; paediatric early warning & response observation tools; paediatric sepsis pathway; Department of Health Statewide Sepsis Steering Committee; RESIST Sepsis Program

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Background

LM was a nearly 16 month old girl who died at the Lady Cilento Children's Hospital in Queensland on 25 August 2016. L ordinarily resided with mother and father, and her older sister.

L's death was reported to the coroner because of concerns about the management of her recent presentations to different local general practitioners particularly over the two days preceding her acute deterioration on 23 August 2016.

L's medical history

Review of L's medical records shows she was usually a well child. Her vaccinations were up to date. Her past medical history included viral respiratory tract infections and chronic impetigo (which had recently been treated with an antibiotic).

L's family were patients of a local medical centre. It is a multiple practitioner general medical practice. Over the several months preceding her death L was seen by five different general practitioners at this practice.

On 22 April 2016 L was reviewed by GP1 for skin sores her mother had noticed on her left leg. Her sister had similar skin sores. GP1 diagnosed impetigo and prescribed topical Bactroban ointment to be applied three times daily.

L's management during July 2016

L was seen at the local medical centre by a different general practitioner, GP2, on Wednesday 6 July 2016 with skin sores. GP2 diagnosed impetigo and prescribed erythromycin suspension as L's mother told her they had Bactroban at home.

L represented to the practice on Monday 18 July 2016. On this occasion she was seen by GP3. L's mother gave a history of L having been unwell with fever and nasal congestion since the previous Friday 15 July. She had come home from day care unwell that day and was seen by an after-hours doctor that evening. L hadn't eaten much that day but was drinking plenty of water, producing wet nappies and playing happily most of the time. No one else in the family had been unwell. L's mother had taken time off work to look after L and asked for a medical certificate.

GP3's notes document a comprehensive examination and assessment. On examination L was alert, afebrile and well hydrated. Her pulse rate was normal, her chest was clear, her respiratory rate normal with no wheeze, crepitation and no respiratory distress. Examination of her ears, nose and throat revealed a red throat and inflamed nostrils. GP3 diagnosed her with a viral upper respiratory tract infection. She advised L's mother to treat L with paracetamol and ibuprofen as required and to keep up fluids. She also recommended symptomatic relief for sore throat and nasal congestion including saline nasal spray and propping her up on pillows to sleep. GP3 advised L's mother to return immediately if L worsened or if she had any other concerns.

L recovered enough to return to day care on Thursday and Friday that week.

L represented to the practice on Monday 25 July. She was seen by GP4 on this occasion. She presented with a history with fevers, cough, rhinorrhea, conjunctival inflammation and discharge which had been worsening over a 3-4 day period. GP4 had only seen L once previously for her two month immunisations. L's mother main concern was that her eyes and

her cough were worsening over the weekend. L's mother advised she had started treating L with chloramphenicol (chlorsig) and also mentioned in passing she was giving her erythromycin for impetigo which had been recurrent.

On examination, L was afebrile and looked well, she had obvious rhinorrhea but otherwise her ear, nose and throat examination was unremarkable. Her chest was clear. GP4 diagnosed L with a viral self-limiting respiratory tract infection "*sounding like another URTI rather than the same one*". There were no signs of secondary infection, noting she was taking erythromycin anyway. He recommended supportive measures and the use of chlorhexidine as an antiseptic wash.

The events of 21-22 August 2016

L's parents called an after-hours doctor to see her at home on Sunday 21 August. The documentation of this consultation indicates L had on and off fevers for a few days that were responsive to nurofen, had been sleeping excessively and had reduced oral intake. L's mother advised she had been diagnosed with Influenza A the previous week. On examination L was noted to look well, with a temperature of 35.8 at that time, a congested throat with associated enlarged cervical lymph nodes and red inflamed ear drums. The after-hours doctor provisionally diagnosed a viral upper respiratory tract infection and prescribed a non-sedating antihistamine (Aerius syrup, 2ml at night for 3-5 nights) with a recommendation for GP review if L's symptoms worsened or did not improve.

L's mother presented to the local medical centre with L the next morning, Monday 22 August. She was seen by GP5 on this occasion, this being the first time he had consulted either mother or child. L's mother reported that she had recently been diagnosed with Influenza A and was concerned that L might also have Influenza A. She told GP5 that she had arranged for an after-hours doctor to see L at home the previous day, who advised L had nasal congestion and recommended an antihistamine.

L's mother reported that over the previous 48 hours L had limited oral intake, elevated temperatures (with a temperature of 39.5 the day before) and was still a bit flat. She had developed some diarrhoea and vomiting that morning. Examination of her ears, nose and throat revealed a red throat but no evidence of tonsillitis. Her lymph nodes were not enlarged. Her chest was clear with no crackles or wheeze present. She had normal bowel sounds. L was febrile with a temperature of 39.4. GP5 also noted an "*unusual mild pink patch on scalp size of a palm – not worrying her*".

GP5's consultation notes do not document a diagnosis but record his advice to L's mother to "*Monityor (sic) – fluids, pana, Delayed ABx prn Advice for EC asap prn*".

Presentation to regional private hospital emergency department on 23 August 2016

L presented to a regional private hospital emergency department at around 8:00am the following morning, 23 August, with a history of three days of upper respiratory tract infection symptoms, fevers to 39, vomiting and diarrhoea with reduced oral and urinary output. The notes document that the whole family was unwell with upper respiratory tract infection symptoms.

On arrival her vital signs were an elevated heart rate 180 beats per minute, respiratory rate 32 breaths per minute, oxygen saturations 97% on room air, temperature 36.4 and normal capillary refill time. She was noted to be happy, contented and playing. She was started on a trial of oral fluids.

However, L's condition deteriorated acutely some three hours later. She developed spreading petechial haemorrhages on her hands, feet and buttocks. She was severely acidotic and coagulopathic and had evidence of mild liver dysfunction. Blood test results were consistent with bacterial sepsis. The presumptive diagnosis was Group A Streptococcal sepsis.

L was managed with intravenous fluids once a scalp cannula was inserted. Her tachycardia improved with fluids but she became more tachypnoeic with reduced oxygen saturations which responded to supplemental oxygen. She was commenced on intravenous antibiotics (ceftriaxone) at around 11:00am.

Arrangements were made for her to be retrieved urgently to the Lady Cilento Children's Hospital. The retrieval team were contacted at 1:00pm and left Brisbane an hour later, arriving in Toowoomba at 4:15pm. On examination, L looked very unwell with a reduced level of consciousness but responsive to pain. She was commenced on intensive resuscitation, intraosseous access obtained, intubated and ventilated. Immediately after intubation and prior to transfer, she was noted to have uneven pupils. An urgent CT brain appeared normal.

On arrival at the Lady Cilento Children's Hospital just after midnight, she was admitted to the Paediatric Intensive Care Unit. She was on inotropic support with non-invasive blood pressure monitoring due to inability to place an arterial line. L developed progressive cardiorespiratory and multiorgan failure. Her blood culture from the regional private hospital returned positive for Group A Streptococcus. After discussion with the infectious diseases team her antibiotic therapy was rationalised to cefotaxime and Lincomycin.

L's condition continued to deteriorate, culminating on a decision to place her on VA-ECMO on the afternoon of 24 August. As the right internal jugular vein was cannulated, a large clot was found in the vessel, which was removed.

A repeat CT brain performed in the early hours of 25 August showed extensive cerebral infarction (bilateral stroke) with a very dismal prognosis. Following discussion with L's parents, she was extubated and died at 8:38pm that evening.

Preliminary independent clinical opinion

L's clinical management was reviewed by an independent doctor from the Department of Health Clinical Forensic Medicine Unit. The reviewing doctor acknowledged it is often very difficult to diagnose sepsis in babies and children, who often appear reasonably well or 'perk up' in between temperature spikes until they have overwhelming infection.

However, the reviewing doctor noted L's chronic skin infection which had recently been treated with an antibiotic, advising that skin infections are a known primary source of Streptococcus pyogenes septicaemia. The reviewing doctor queried whether a swab was ever collected and questioned the antibiotic (erythrocmycin) used to treat the infection, noting it is not one mentioned within current clinical guidelines for this purpose. Throat infection was also identified as a possible source of L's sepsis.

The reviewing doctor queried GP5's management of L's presentation on 22 August, noting by this time L was a 15 month old baby with extremely high fevers for many days, decreased oral/fluid intake for several days, a skin lesion of uncertain significance, more than one contact with a general practitioner and an unclear primary diagnosis. The reviewing doctor considered this presentation was essentially a pyrexia (fever) of unknown origin in a very small child.

The reviewing doctor was satisfied there was timely management and referral for retrieval to the Lady Cilento Children's Hospital on the morning of 23 August 2016.

The identification of a clot when L was cannulated for ECMO at the Lady Cilento Children's Hospital reinforced the severity of her illness. The reviewing doctor advised this process would have started by the time L presented to the regional private hospital emergency department and as such, it was not the insertion of lines for ECMO that caused L's bilateral stroke.

Having regard to this advice, and noting the family's level of concern about L's pre-hospital management over 21-22 August 2016, I declined to authorise the issue of the proposed cause of death certificate.

Autopsy findings

I gave permission for a post-mortem MRI to be performed at the Lady Cilento Children's Hospital. These scans showed extensive cerebral ischaemic changes as well as changes involving the lungs, kidneys and spleen, consistent with severe sepsis and ischaemia. There was no evidence of congenital structural abnormality or trauma.

In recognition of the family's significant distress at the prospect of autopsy, an external examination and review of the post-mortem MRI scans only was performed by an experienced forensic pathologist at the John Tonge Centre on 30 August 2016. External examination revealed a florid petechial rash with areas of purpura fulminans, in keeping with sepsis and organ failure. There was a crusted skin lesion on the left upper lateral arm, possibly representing cutaneous infection. There were a few collapsed blisters on the lower limbs. Toxicological testing of hospital admission blood collected at 1:00am on 24 August detected therapeutic levels of medications administered during hospital management. No other drugs or alcohol were detected.

Having regard to these findings and the clinical history, the pathologist attributed the death to sepsis (Group A Streptococcus).

Statements from the general practitioners involved in L's care

I provided each of the general practitioners from the local medical practice who saw L during the months preceding her death with an opportunity to clarify the basis of their management of her various presentations.

GP1 did not perform a swab when he examined L's skin sores on 22 April 2016. He recalled that L appeared well and he did not consider her infection to be severe at that time.

GP2 did not swab the sores when she reviewed L on 6 July 2016. She said she was told the family had a supply of Bactroban at home so she prescribed erythromycin suspension as, in her experience, it was effective against streptococcal and staphylococcal impetigo. GP2 explained she does not routinely rely on Bactroban alone to treat impetigo as she finds it usually does not clear the infection if there are multiple sores. In 20 years of practice she had never had a patient with severe sequelae to impetigo, and has always used erythromycin suspension "as per previous antibiotic guidelines".

GP2 felt the collection of a bacterial swab and prescription of a different antibiotic as per the current guidelines may have changed the outcome for L, and offered the view that the outcome for any patient is better if they continue to see their usual general practitioner each visit.

GP3 clarified that she did not see any skin sores on L and nor did L's mother bring any to her attention when she examined her on 18 July 2015. GP3 reiterated her opinion that L presented with typical features of an upper respiratory tract infection that day. She clarified that her

notation of temperature 35.7 was a typographical error and should have read 37.5.

GP4 did not document that L had any active skin lesions, suggesting to him that the lesions were already resolving with the erythromycin (though he had no specific recollection to confirm this). The fact she was already taking erythromycin would cover a significant number of bacterial respiratory tract infections such as tonsillitis or otitis media. He did not take any swabs during this consultation, and advised he would not routinely swab skin lesions if a patient was already taking antibiotics and the lesions were resolving; he would only consider taking a swab at the initiation of treatment or if there was a failure to treatment to clear the lesions. In the 10 years GP4 had worked in the local area he had never seen a case of impetigo cause septicaemia.

GP5 clarified that he provisionally diagnosed a viral infection of some sort, most likely Influenza A. In his statement, GP5 reported there had been a large number of Influenza A infections in the regional city over winter. In the absence of localising signs of infection, he felt L's presentation was in keeping with Influenza A infection or similar viral infection.

GP5 said he also visually examined L's skin and mucous membranes. He recalls but did not document specifically that her skin turgor and colour were normal. He said asked L's mother about L's urine output.

With respect to his notation of the unusual patch on L's scalp, GP5 recalled this was on the left side of her scalp, prompting him to ask L's mother if this was where L's head had been resting against a car seat or stroller, as this was how it appeared to him. He described it as a flat, pink, defined blanching patch; it was not vasculitic, cellulitic, hot or swollen and nor was it causing L any distress. He considered it to be either a transient pressure area or part of a viral presentation. He did not see any sinister rashes or lesions of concern elsewhere on her trunk or limbs. In particular he did not note the presence of any significant lesion on her left upper arm, and states that had it present at the time of his examination, he would have noted it in the medical record. As such he is confident there was no "pustular lesion" present when he examined L that morning.

GP5 said L's mother told him she had an erythromycin script at home and asked whether she should use this to treat the infection. Given his opinion that it was most likely a viral infection, GP5 advised this was not appropriate. He was aware L had previously been given a script for erythromycin for impetigo.

GP5 said he told L's mother he did not see any benefit in ordering tests such as a nasopharyngeal swab at that point in time because the results would take too long to come back. He advised her to take L to hospital if she did not improve during the day or if she had any concerns.

GP5 disagreed with the reviewing doctor's suggestion that L had presented to him on 22 August with a fever of unknown origin. He reiterated his understanding that her fevers had commenced after she was seen by the after-hours doctor at home the previous day. He considered there was nothing in her history to suggest any chronicity in her fevers and her acute clinical presentation was to him one of a viral infection, likely Influenza A.

GP5 expressed his devastation at L's death. It is evident he has reflected carefully on his management of her presentation that day. He does not believe there is anything he could have done differently. He remains uncertain whether earlier attendance at a hospital emergency department would have changed the outcome for L.

Outcomes of the Lady Cilento Children's Hospital (LCCH) clinical review

L's clinical management was discussed by the LCCH Paediatric Intensive Care Mortality and Morbidity meeting on 28 September 2016.

This meeting identified that the first contact with Retrieval Services Queensland was delayed, possibly due to the regional private hospital treating team's delay in recognising a deteriorating child with septic shock. It was considered there was delay in administering antibiotics, fluid resuscitation, inotropes and intubation and no use of local specialist support either within the hospital or from the regional public hospital.

The retrieval had to occur by road as bad weather negated the use of a helicopter. The ambulance did not proceed Code 1 (lights and sirens) and Telemedicine was not available at the local hospital.

It was felt there were lessons to be learned from the L's management at the regional private hospital to improve timely recognition and response to deterioration of a child with septic shock including use of an early warning and response observation tool which may have prompted the treating team to make earlier contact with Retrieval Services Queensland about L's elevated heart rate on admission and throughout the day and resulted in earlier administration of antibiotic therapy and intravenous fluids.

These concerns were communicated back to the regional private hospital. I have since been provided with the clinical review outcomes from that facility.

I am advised that the management of L's presentation was audited by the private hospital emergency department in 2016 with a second audit in January 2018 and then discussed at the emergency department's Mortality and Morbidity meeting on 21 February 2018. As part of this process, the private hospital's emergency department Director spoke with GP5, L's treating paediatrician, the senior nursing personnel who attended L and the Clinical Director of Retrieval Services Queensland. The treating emergency physician was not available for interview as he retired from practice due to ill health soon after L's death.

The emergency department Director's review concluded that:

- L was appropriately triaged (category 3) and seen by the emergency physician within 11 minutes after arrival
- the paediatric vital signs chart used at that time was a single trigger response chart – as at early March 2018, the private hospital emergency department was in the process of transitioning to the Children's Early Warning Tool (CEWT) currently used across Queensland Health hospitals
- there was significant escalation of care within the emergency department when L's deterioration was recognised – her care was discussed directly with her treating paediatrician who saw her soon afterwards and by which time difficulty gaining IV access was recognised and had become the main priority
- the delay in gaining IV access impacted significantly on L's care – in response to this issue, the emergency department has started implementing the NSW Paediatric Sepsis Pathway which mandates early intra-osseous placement in cases of difficult intravenous access. As part of this process, the clinical pathway is being modified to incorporate early intramuscular antibiotic cover while access proceeds
- the hospital's Medical Emergency Team call system is an efficient means of rapid clinical escalation and no additional measures are needed. The emergency department already has a process by which the Director is called to attend serious and critical cases
- L was initially admitted locally under her treating paediatrician - early recognition of poor clinical response would have assisted in a timelier referral
- the safest location for children awaiting transfer to Brisbane is the hospital's intensive

care unit
- a junior team member was tasked to arrange the transfer
- L was discussed with the LCCH at around 1:05pm with the retrieval team on site by 4:15pm – the response time of more than three hours "did not serve the timely transfer" well and it is questioned why QAS did not travel "lights and sirens" during the outward leg of an urgent retrieval
- the paediatric retrieval team were on site for approximately seven hours during which time there were numerous phone calls between the retrieval doctor and the paediatric consultant back at LCCH – this was thought to reflect the fact that the retrieval doctor was probably not senior enough to facilitate retrieval in a timely way
- L was intubated almost two hours after the retrieval team arrived (by the hospital's intensivist) – it was felt it should have been possible to move her soon after this instead of remaining "for a further 4 hours with futile attempts at different interventions include a CT of her brain". The emergency physician and medical director felt there was a longer scene time than justified in this case.

He recommended that more senior staff be tasked to retrieve critically unwell children with shorter scene times and faster turnaround times.

L's management was also discussed by the regional private hospital's Paediatric Mortality and Morbidity Meeting on 27 September 2016 and again on 7 February 2017. These discussions culminated in recommendations to:
- move urgently (within 15 minutes) to intraosseous access in cases where there is difficulty gaining intravenous access;
- licence the hospital's intensive care unit to provide care for sick children awaiting retrieval when moving the child to that location is appropriate for escalation of care;
- require a paediatrician to be available within the hospital for the duration of the child's stay in intensive care; and
- require a paediatric trained nurse to provide direct care to the child in the intensive care unit.

In response to these recommendations, the regional private hospital has recognised that the paediatric observation tool in use at the time of L's presentation is not in line with current best practice guidelines and has commenced negotiations with the Department of Health for the hospital to use the CEWT for paediatric inpatients. I am advised the CEWT requires minor adjustment to reflect the differences in staffing at a private hospital (with no resident or registrar level doctors). The hospital's Medical Advisory Committee has also approved implementation of the Emergency Department CEWT. As at March 2018, the hospital was awaiting completion of contractual documentation from the Department of Health, with clinical education ready to roll out in anticipation of implementation by 31 March 2018.

In addition to implementing CEWT, the regional private hospital has developed a formal sepsis pathway for presentation to the Emergency Department and Paediatric Craft Groups and final approval by the Medical Advisory Committee with a view to implementation by 30 April 2018.

Finally, the hospital has formalised arrangements supported by updated clinical policy and procedure to ensure critically unwell paediatric patients are managed in the intensive care unit with paediatric nurse support and a paediatrician on site pending retrieval.

Independent clinical review

I arranged for an independent paediatrician and community child health specialist, Dr Catherine Skellern from the Lady Cilento Children's Hospital, to review the medical records and statements provided by the various general practitioners with a view to advising whether

there may have been an opportunity to change the outcome for L.

Dr Skellern advised that Group A Streptococcus can cause infections of the skin and throat, ranging from very mild conditions to severe life threatening or fatal disease. Dr Skellern was satisfied that L did not have any identifiable risk factors that would have raised concern by any of the doctors assessing her in the months, weeks and days preceding her acute deterioration, to suggest any vulnerability to the severe form of this condition.

Dr Skellern advised it was not possible to determine whether L's infection was connected to the impetigo or whether it arose from acute infection sourced from the pharynx.

Dr Skellern considered the management of L's skin sores. She was satisfied that:

- GP1's diagnosis and management with Bactroban without taking a skin swab (five months prior to L's death) was in accordance with current therapeutic guidelines for managing impetigo. Dr Skellern advised that skin swabs cannot differentiate between bacterial infection and colonisation, and generally infections resolve before swab results become available to influence treatment decisions;

- GP2's decision to use an antibiotic for infection with multiple lesions three months later (seven weeks prior to L's death) was appropriate given that the topical treatment used for the previous episode may have been ineffective or used for an insufficient period of time. Dr Skellern advised that while dicloxacilin or cephalexin is now recommended by the current therapeutic guidelines as first line oral treatment for recurrent or multi-lesion impetigo to improve coverage against streptococcal and staphylococcal infections, the choice of antibiotic falls within the scope of individual clinical variance;

- When seen by GP3 two weeks later (five weeks prior to her death), L did not have any symptoms or signs to suggest a systemic illness at that time. The examination finding of a red throat with inflamed nasal mucosa with nasal congestion supported the clinical diagnosis of a likely viral upper respiratory tract infection which would be expected to be self-limiting, and the treatment recommendations were appropriate at that time;

- GP4's diagnosis of a viral self-limiting illness when he saw L one week later (one month prior to her death) was supported by the clinical history and examination findings;

- The after-hours doctor's examination findings two days prior to L's acute deterioration supported the clinical diagnosis of viral upper respiratory tract infection, alongside the history of L's mother having been diagnosed with Influenza A the previous week – the after-hours doctor's recommendation for supportive treatment and medical review if symptoms worsened or did not improve was reasonable at that time;

- The scalp lesion described by GP5 was non-specific and not noted by any other clinicians at any later stage of L's illness. Dr Skellern agreed with GP5 that it was most likely positional (vascular congestion) rather than haemorrhagic or infective; and

- GP5 took an appropriate patient history, his physical examination was appropriately thorough and his clinical diagnosis of viral infection (presumed to be Influenza A) was reasonable given the information known to him at the time. Dr Skellern considered the absence of any significant respiratory sign or symptoms or signs of dehydration support GP5's recommendation for supportive treatment and representation if symptoms persisted. Dr Skellern agreed that a nasopharyngeal swab would not have been relevant to clinical decision making at that time and would not have changed the outcome for L.

Dr Skellern concluded there was no clear opportunity to have changed the outcome for L prior to her presenting to the regional private hospital on 23 August. It is only with the benefit of hindsight that the earlier presentations for medical review on 21 and 22 August are appreciated as the prodrome of her ultimately fatal illness.

Dr Skellern considered the outcomes of the clinical review processes undertaken by each of the LCCH and the regional private hospital. She agreed that delay in gaining intravenous access and delay in recognising L's deterioration with septic shock which in turn led to delay in commencing antibiotics and fluid resuscitation or intropes (until much later after the retrieval team arrived) and initiating the retrieval impacted significantly on L's care; however whether any of those factors in isolation or in combination changed the outcome for L was unclear.

National and State initiatives to reduce sepsis-related deaths

Sepsis is a life-threatening illness. The Australian Sepsis Network's report Stopping Sepsis: A National Action Plan (December 2017) cites over 18,000 Australians suffer from sepsis every year, 5000 of those affected will die, and of those who survive, half are left with a disability or impaired function. The life-time risk of suffering from sepsis is highest during early childhood, resulting in a disproportionate impact of sepsis on children and infants. The report notes that half of all recorded paediatric sepsis cases in Australia, and one-third of paediatric sepsis deaths, occur in previously healthy children.

In May 2017, the World Health Assembly at the World Health Organisation recognised sepsis as a global health priority by formally adopting a resolution to improve the prevention, diagnosis and management of sepsis around the world.

Early treatment is known and proven to saves lives.

On 16 November 2017, The George Institute for Global Health and the Australian Sepsis Network convened a policy roundtable to address the pressing need to improve the awareness, prevention and treatment of sepsis in Australia. This process explored the challenges of early detection and best management of sepsis in pre- to post-hospital care. It culminated in the development of a co-ordinated national action plan including a recommendation to establish and develop a nationally recognised clinical standard for sepsis detection and treatment including clinical care pathways for rapid in-hospital detection, treatment and management.

In 2017, the Queensland Department of Health established a Statewide Sepsis Steering Committee to provide advice and guidance for a statewide sepsis program aimed at reducing mortality from sepsis. As part of this process, the Department of Health has developed and is piloting an emergency department adult sepsis screening tool and pathway at the Gold Coast University Hospital emergency department.

The paediatric phase of the sepsis program was launched at a Statewide Paediatric Sepsis forum in August 2017. A working group has since been established to develop a statewide paediatric pathway to support early recognition and management of children in emergency departments.

Planning is underway for a digital sepsis module for incorporation the digital hospital record systems being rolled out across Queensland public hospitals.

Findings required by s. 45

Identity of the deceased: [de-identified for publication purposes]

How she died: LM died from natural causes. It has not been possible to identify the source of the Group A Streptococcal sepsis.

Having regard to Dr Skellern's opinion, I am satisfied that L was managed appropriately by each of the general practitioners who saw her over the months, weeks and days prior to her acute deterioration on 23 August 2016.

Fundamentally, there was delay in recognising and managing L's deterioration with septic shock at regional private hospital on 23 April 2016. Delay in gaining intravenous access, administering antibiotics, fluid resuscitation, inotropes and intubation and delay initiating retrieval were factors that impacted on L's care on 23 August 2016. While I cannot be certain that any one of these factors, or a combination of them significantly changed the outcome for L, they each represent a missed opportunity to have optimised her care and as such were significant in maximising the potential for a better clinical outcome.

It is evident that the Lady Cilento Children's Hospital clinical review outcomes were instrumental in informing the focus and outcomes of the various review processes undertaken by the regional private hospital. I am satisfied this facility has since taken significant and appropriate steps - implementing an appropriately modified paediatric early warning observation tool, a sepsis pathway and arrangements to ensure critically unwell paediatric patients are cared for in intensive care with paediatric nursing and consultant support pending retrieval – that will greatly enhance early sepsis detection, treatment and management.

The current statewide focus on sepsis in children and adults and the initiatives flowing from the work of the Statewide Sepsis Steering Committee are extremely encouraging.

Place of death: Lady Cilento Children's Hospital

Date of death: 25 August 2016

Cause of death: 1(a) Sepsis (Group A Streptococcus)

I close the investigation.

Ainslie Kirkegaard
Coronial Registrar
CORONERS COURT OF QUEENSLAND
4 May 2018