QUEENSLAND COURTS

CORONERS COURT OF QUEENSLAND

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of RD**
TITLE OF COURT:	Coroners Court
JURISDICTION:	BRISBANE
DATE:	20/08/2018
FILE NO(s):	2016/2097
FINDINGS OF:	Ainslie Kirkegaard, Coronial Registrar
CATCHWORDS:	CORONERS: regional private hospital emergency medical centre; adult sepsis; failure to recognise and respond to clinical deterioration; inappropriate inter-hospital transfer; sepsis pathway; Department of Health Statewide Sepsis Steering Committee; RESIST Sepsis Program

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Background

RD was a 64 year old man who died at a regional public hospital on 24 May 2016. He had been living in an aged care residential service since 2014.

RD's death was reported to the coroner because of concerns about the care he received at a regional private hospital emergency medical centre and the appropriateness of the decision to transfer him to another regional private hospital in the early hours of 23 May.

My investigation has been informed by review of the patient records, statements from medical, nursing and paramedic personnel involved in RD's care, the outcomes of clinical review undertaken by the regional private hospital and independent clinical opinion.

RD's medical history

Review of RD's medical records shows he had a medical history including poorly controlled type 2 diabetes mellitus, right above knee amputation secondary to necrotizing fasciitis (2014) leaving him wheelchair bound, renal calculus and chronic obstructive pulmonary disease (ex-heavy smoker), chronic pain, previous excessive alcohol intake and vancomycin resistant enterococcus (VRE) positive. There was no documented history of dementia.

In the weeks preceding his death, RD's main issues were intermittent constipation, insomnia, painful pressure areas on his legs and a scrotal burn from a hot water spill. He was reviewed regularly by a visiting general practitioner.

In the days leading up to 22 May 2016, RD was noted to have been "unwell with vomiting and bowel problems". He developed loose bowel motions on 15 May for which he was seen by his doctor on 16 May, with no significant clinical concerns documented.

Presentation to regional private hospital emergency department on 22 May 2016

On 22 May, RD was noted to be nauseous and dizzy with poor oral intake and hypoglycaemia (BSL 2.9mmol at 12:45pm). The nursing home notified his doctor of his condition. At 7:30pm, his observations were recorded as blood pressure 105/75; pulse rate 93 and temperature 36.8. The nursing home staff were concerned as he appeared unwell, was vomiting and not having any oral intake. The ambulance was called and he was transported to a regional private hospital emergency medical centre.

On arrival there at 8:15pm, RD was triaged as Category 4 (meaning he was to be medically reviewed within one hour). The triage nurse documented a two day history of lethargy, vomiting (several times) and diarrhoea (x1). RD reported the room was spinning when he sat up, and his eyes were hurting. His observations taken at 8:20pm were documented as respiratory rate 20; oxygen saturation 99% on room air; blood pressure 105/55; heart rate 95; temperature 35.8 and patient alert. His BSL was 3.6mmol at 8:30pm.

Bloods were taken at 9:00pm in anticipation of testing (they were sent with the pathology courier at 10:00pm prior to RD being medically reviewed).

An hour later his observations were documented as respiratory rate 19; oxygen saturation 97% on room air; blood pressure 100's/60's; heart rate high 80's; temperature 36 and patient alert. His BSL was 5.3mmoL.

He was reviewed by a locum emergency medical officer, Dr F at 10:34pm. On examination he was noted to look very dry, afebrile (temperature 36.8), mildly hypotensive (blood pressure 102/70), had a sinus tachycardia (90-116 beats per minute) and mild hypoglycaemia (BSL 3.6). He was described as 'talking nonsense' but cooperative. Heart and lung examinations were normal. His abdomen was soft and non tender and he had passed a soft bowel motion. Dr F diagnosed acute renal failure caused by infection. She considered he needed rehydration and admission. Dr F ordered blood tests, urine microscopy and intravenous fluids and contacted the nursing home at 10:50pm seeking further collateral history.

At 11:00pm, RD's observations were documented as respiratory rate 20-24; oxygen saturation 98-100% on room air; blood pressure 100's/50's; heart rate 80's; temperature not recorded and patient alert. An ECG performed at this time was described as normal, other than sinus tachycardia (106bpm).

RD was cannulated at 12:30am and commenced on ne litre intravenous normal saline at 11:15pm.

An abnormal troponin T result was printed at 11:30pm and signed off by Dr F.

RD was taken for chest x-ray at 11:40pm. It was essentially unremarkable.

At 11:50pm his observations were documented as respiratory rate 20-24; oxygen saturation 95-97% on room air; blood pressure 90's/50's; heart rate 100's; temperature and level of consciousness not recorded.

At about this time, the pathology results were printed and signed off by Dr F. The results revealed acute renal failure (creatinine 675, compared with 137 some five days earlier) but normal C-reactive protein (<5, an inflammatory marker. There is no reference in the patient record of the other blood test results showing hyperkalaemia (6.4; normal range 3.5-5.0), metabolic acidosis (bicarb 10; normal range 25-33) and extremely elevated troponins (185; normal <14). There is no indication in the medical record that any therapy was initiated to address these issues.

RD was given apple juice at 12:15am for a BSL of 3.6mmoL.

RN1 inserted an indwelling catheter was inserted at around 2:00am and documented that it drained 250ml of urine.

Dr F contacted another regional private hospital at around 2:00am to arrange inter-hospital transfer. She spoke with Dr O and documented that RD had been accepted at that hospital.

Dr O recalled being contacted by Dr F in the early hours of 23 May about RD. She advised he was alert, dehydrated, hypotensive with blood test results showing an electrolyte imbalance and evidence of acute renal failure and from her physical examination, her diagnosis was acute kidney failure from dehydration. Dr O told her RD needed to be managed by:

- intravenous fluids for dehydration – these were administered;
- correction of any electrolyte imbalance and recheck with repeat blood tests following fluid resuscitation - this was not done;
- inserting an indwelling urinary catheter to monitor fluid balance – done;
- check urine macroscopically and sent a sample for testing as a baseline urine test – this was done;
- clarifying with the nursing home of RD's medical history and the circumstances leading to his presentation with the nursing home (in order to consider potential rhabdomyolysis) – unclear whether this was done;
- confirming baseline renal function from previous blood tests given RD had diabetes – unclear whether this was done;
- exploring other factors that could contribute to renal failure – not done; and
- ensure RD was haemodynamically stable prior to transfer – not done.

Initial urine microscopy results were suggestive of a urinary tract infection with elevated leucocytes but there is no reference to this in the medical record (it is possible this result was not available to the treating team prior to transfer). A urine dipstick was performed but there is no documentation regarding the presence or absence of leucocytes, nitrates or blood. No antibiotics were commenced to cover urosepsis despite the consideration of a possible underlying infection.

The referral facsimile was sent at 2:10am. It recorded observations taken at 2:10am of respiratory rate 20; oxygen saturation 95%; blood pressure 86/51; heart rate 108; temperature 36.7 and level of consciousness 14/15. RD's BSL was 5mmoL.

It appears Dr F reviewed RD again at 2:34am.

The last set of observations were performed at 3:40am on 23 May. These showed a significant drop in RD's blood pressure (84/42) associated with tachycardia (110 beats per minute) and reduced levels of consciousness (rousable to voice only). Despite these observations meeting MET call criteria, the interhospital transfer proceeded.

Information provided by the Queensland Ambulance Service indicates the transfer was booked as an acute non-time critical transport.

An advanced care paramedic crew attended the regional private hospital at 3:55am. They recalled receiving clinical handover from two nurses, one male and one female, both of whom appeared to be involved in RD's care. They recall there was a doctor present in the Emergency Medical Centre but they did not speak with the doctor. The male nurse provided a handover first and then the female nurse provided further information. They were advised RD had been diagnosed with acute renal failure possibly as a result of an infection; he had been given three litres of intravenous fluid but only two litres had gone in due to one litre having been lost to tissuing; he had no urine output during the night despite having had over two litres intravenous fluid therapy; he had one episode of hypotension during the night but his blood pressure

had been stable since at around 100 systolic; they had trouble maintaining his blood sugar during the night and all his other observations were normal.

On questioning, they were told the renal failure was a new diagnosis. They said they were told a catheter had been inserted but no fluid had come out. The fluid bag was still running and the nurses requested that it continue during transport (which it did). One of the nurses tested RD's BSL – it was 5.1mmoL which the nurse commented was the best it had been all night.

The paramedics were not told when the hypotensive episode occurred, how long it lasted or what they did as a result.

RD appeared to be asleep. One of the paramedics tried to rouse him but he was very drowsy which seemed unusual. When asked about this, the nurse told them he had a history of dementia and that he had been awake all night 'talking nonsense', this was the first time he had slept and was "probably exhausted". This sounded reasonable and his condition appeared to them to be stable.

The paramedics loaded RD into the ambulance and took his observations. They were stable. His blood pressure was 90 which they described as borderline hypotensive but not alarming. RD was awake but still very drowsy and confused.

The ambulance left the hospital at 4:25am. Five minutes into the trip, RD dropped his oxygen saturations to 85% and it was difficult to obtain a blood pressure reading. The ambulance pulled over and a blood pressure reading of 70/40 was eventually obtained. When checked again after one minute, the blood pressure was 57/38. This was very concerning to the paramedics. An ECG was normal but he was peripherally shut down and becoming more anxious. His intravenous fluids were increased and his leg elevated to increase venous return. They took his observations again a few minutes later and his blood pressure had increased to 83 systolic. He appeared to have more colour in his face. The paramedics worked on him for seven minutes before continuing en route. RD's blood pressure improved to 90 systolic. It was during this time the paramedics reviewed the hospital paperwork given to them by the nurses. It revealed there was more than one episode of hypotension during the night, this being inconsistent with the information they were given at handover from the nurses. Further, RD had been hypotensive at the time the hospital had booked the transfer. There was nothing in the paperwork about RD having dementia.

The paramedics contacted the QAS Operations Centre and were advised to divert to a nearby small regional public hospital as RD was too unstable for his intended destination (which did not have an emergency department at that time). RD's blood pressure dropped to 75 systolic as they were approaching the hospital.

The paramedics escalated their concerns about what had happened to their supervisor, with one stating "*in conclusion, I believe that this patient was not stable enough for transport from [the regional private hospital] and the handover from [that hospital] was very poor. Had we of had known the full extent of the patient's condition and how the patient had progressed during the night at [that hospital], we would not have agreed to transport this patient.*"

Management at small regional public hospital

RD was examined by a registrar at the small regional public hospital at 5:48am. On arrival he had fluctuating level of consciousness, was hypothermic, had evidence of poor perfusion with reduced capillary refill, was peripherally shut down and had no urine output. He was assessed as being in septic shock with multiorgan failure, severe acute metabolic acidosis, acute renal failure and hyperkalaemia. Immediate management including immediate treatment with an insulin/dextrose infusion to rapidly reduce his potassium level, bicarbonate and intravenous fluids.

The family was contacted for collateral history and to determine his acute resuscitation plan. It was agreed he should be for full active treatment but no CPR in the event of cardiac arrest. The family confirmed RD did not have a history of dementia and that he was usually alert and appropriate.

The emergency consultant arrived and assisted to intubate RD. Arterial and central lines were placed as he required inotrope support with adrenaline. He was hyperventilated to combat his worsening acidosis and commenced on triple intravenous antibiotics.

Repeat ECG showed atrial fibrillation with some inferior ST segment depression suggestive of myocardial ischaemia, likely associated with his hypotension.

Bloods taken at 5:50am showed reduced haemoglobin (93; normal range 135-180); elevated white cell count (14.9; normal range 4.0-11.0); elevated troponin (0.057; normal <0.040); elevated potassium (6.5; normal 3.5-5.2); elevated urea (45.1; normal range 2.9-8.2) and elevated creatinine (693; normal range 64-108). Blood cultures returned positive for Staphylococcus episdermis and coagulase negative Staphylococcus, these considered most likely to be caused by contamination rather than reflect the causative organism. Urine grews pseudomona and stenotropomonas maltophilia, making uropsepsis the likely pathology.

CT imaging showed no obvious evidence of acute intracranial pathology or ischaemic bowel but there was possible acute pancreatitis.

Arrangements were made to transfer RD to a larger regional hospital intensive care unit for further management.

Management at larger regional public hospital

RD arrived at the larger regional public hospital at around 11:00am and was admitted to the intensive care unit. His antibiotics were changed to Tazocin and he was commenced on dialysis. His condition deteriorated with refractory shock overnight and following discussion with the family, it was decided to withdraw active treatment. RD died on 24 May 2016.

Police attended the scene and were satisfied there were no suspicious circumstances.

Autopsy findings

An external examination and full internal autopsy were performed at the John Tonge Centre on 1 June 2016. The brain was retained for specialist neuropathology examination. The final autopsy report issued on 15 December. The autopsy revealed no evidence of sepsis, no evidence of ischaemic bowel, a borderline enlarged heart, extensive coronary atherosclerosis, microscopic changes in the heart suggestive of cardiogenic shock, extensive renal scarring and no evidence of stroke despite extensive occlusion of the carotid arteries. A faecal test was positive for adenovirus.

Taking these findings and the clinical history into account, the pathologist determined the cause of death to be septic shock, with ischaemic heart disease as a significant other condition. I note the pathologist's advice that although autopsy did not identify evidence of sepsis, this condition can be quite subtle and its source may not be found pathologically especially when it has been partially treated.

Statements provided by the medical and nursing staff involved in RD's care at the regional private hospital

I obtained statements from the regional private hospital nursing staff and the doctor responsible for the care provided to RD over 22-23 May 2016.

RN1 was rostered on night shift as Team Leader from 8:30pm – 7:00am. He was an experienced nurse (28 years) who had worked in the Emergency Medical Centre since 2010.

RN2 was rostered on night shift from 10:45pm – 7:15am. She was an experienced nurse (30 years) and had worked in the Emergency Medical Centre since 2013.

RN3 was working a straddle shift in the Emergency Medical Centre from 6:00pm – 2:30am. She was an experienced nurse (35 years) who had worked in the Emergency Medical Centre since 2005.

Together the three RNs team-nursed the patients overnight as per their usual practice.

Dr F was a casual medical officer who commenced her night duty shift at 10:00pm on 22 May. She had been working as a locum doctor at the regional private hospital since December 2015. She was the only doctor rostered in the Emergency Medical Centre overnight.

RN 3 triaged RD but had limited involvement in his care as she finished her shift early. He was primarily nursed by RN1 and RN2. He was described as generally compliant and quiet during his stay, though confused and restless at times. He had several episodes of faecal incontinence which RN1 and RN2 cleaned up.

Dr F and the nurses all describe the night shift as very busy with multiple presentations and admissions, several patients (including RD) who were incontinent of faeces, a confused alcoholic who was constantly climbing out of bed, a German tourist with nasty diarrhoea, a neck and shoulder injury resulting from a surfing accident, an epistaxis and a fish hook in the finger.

The nurses' statements suggest Dr F received patient handover from the medical staff and none of the nurses were part of that process as the medical and nursing handovers were conducted separately.

Dr F did not see the ambulance report and could not recall the details of the handover she says she would have received about RD. She was unable to obtain any information from him so she phoned the nursing home. She recalled speaking with a male staff member who said he knew RD well and reported RD had dementia, was usually continent, could usually feed himself but otherwise needed high level care and was sometimes difficult to manage.

RN1 and RN2 both stated they kept Dr F updated about RD's condition, including the low blood pressure, throughout the night. RN1 states Dr F was aware of the hypotension and responded by ordering more intravenous fluids. RN2 explained they were required to notify a medical officer when a patient's systolic blood pressure dropped below 100.

Having examined RD and noting the pathology results, Dr F made the diagnosis of acute renal failure but was unable to ascertain a cause. She said she considered infection but could not find a focus. She ordered treatment with oral fluids (apple juice) and intravenous normal saline. RD's blood pressure had not improved after the first litre of normal saline so she ordered a second litre. Unfortunately the intravenous access tissued. Dr F estimated there was approximately one litre of fluid in the subcutaneous tissues of his arm so she ordered a further one litre of normal saline and the cannula was re-sited.

The hospital's After Hours Manager usually visited the Emergency Medical Centre 2-3 times overnight. RN1 explained it was his practice to phone them if he had any concerns but could not recall any specific discussion with the After Hours Manager about RD.

Dr F stated it was obvious on presentation that RD needed admission to hospital. However, it was necessary to make a diagnosis and commence treatment first. She explained that she was the only doctor on a busy shift that night, this accounting for her delay in arranging transfer for admission elsewhere. The hospital is a private health facility – any public patients requiring admission were normally transferred to the larger regional private hospital. As RD was a public patient, Dr F phoned the admitting doctor at that, Dr O, to discuss the case. She said that although she too was not sure what could have caused the renal failure, she accepted RD for admission.

The evidence supports a finding that it was Dr F who completed the Inter-Hospital Request for Transfer Fax and given it recorded the most recent observations, including blood pressure of 86/51, Dr F would have been aware of his worsening hypotension at that time (2:10am).

RN1 conceded they knew RD's blood pressure was low and with the benefit of hindsight, it was clear he should not have been transferred with such hypotension. He was the nurse who performed the last set of observations at 3:40am, noting "remains hypotensive." RN1 conceded he was aware of the hypotension and should have

relayed his concerns to the After Hours Manager. In his words "*because the patient had already been accepted to [the larger regional private hospital] and the transfer arranged in a timely manner, I considered the sooner he was transferred, the better."*

RN2 was surprised RD did not receive antibiotics. However, she noted he was hypotensive but not febrile. RN2 said that while she was aware of RD's unstable BSL and hypotension overnight, she was not aware his blood pressure had dropped to as low as 85/45. She did not record the observations documented at 2:15am and she said she was not involved in the handover to the paramedics. She interpreted RD's vigorous consumption of two glasses of apple juice at around 2:00am as an indication he was improving and responding to the intravenous therapy. With the benefit of hindsight, she assumed the reason Dr F did order a fourth bag of fluids stat was because she was aware that the blood pressure had dropped.

The paramedics who arrived to transport RD to the larger regional private hospital recall receiving handover from "two nurses", one male and the other female, who both seemed to have been involved in RD's care. The evidence supports a finding that the male nurse was RN1. Unfortunately RN1 could not recall if he spoke to the paramedics or if information was conveyed to them by Dr F and/or RN2. The evidence of the paramedics is that although a doctor was present in the Emergency Medical Centre when they were there, they did not speak to the doctor. On the evidence available to me, which suggests there were only two nurses working in the Emergency Medical Centre at that time, as RN3 had left at 12:10am, the other nurse is most likely to have been RN2, though she claimed not to have been involved in the handover to QAS. I find that her recollection is mistaken in this regard.

All the clinicians involved in RD's care have since recognised that he should have remained at the regional private hospital. RN1 suggested RD might have received more attention if the Emergency Medical Centre was not so busy that night. He was not accompanied by family or friends. The shift was "a very busy one" for two nurses and one doctor. RN1 suggested that had Dr F not been so busy with multiple admissions she may have turned her mind to contacting ICU (medical back-up for the Emergency Medical Centre) to ask if they could take RD as inotropic support might have been appropriate.

With the benefit of hindsight, Dr F said that had she realised RD was sicker than she had thought, she would not have put him in an ambulance but would have contacted the intensive care physician about admission to ICU. Dr F also acknowledged she should also have contacted RD's family to enquire about any existing end of life decisions.

Regional private hospital clinical review outcomes

The regional private hospital undertook a Critical Systems Analysis of the care provided to RD over 22-23 May 2016. This review identified a range of factors:

- poor critical thinking in relation to diagnosis
- RD's mental state was attributed to dementia, reportedly on the basis of information provided to Dr F by the nursing home
- limited understanding of the seriousness of RD's condition

- an inadequate treatment plan particularly in relation to management of hypotension and possible sepsis
- failure by medical and nursing staff to identify clinical deterioration
- clinical handover to the After Hours Manager did not raise concerns about RD's condition
- failure to escalate RD's condition to either the After Hours Manager or the on-call intensivist; and
- transfer proceeded despite RD's condition meeting MET call criteria.

It was noted this was Dr F's first night of her night duty roster. The Emergency Medical Centre was noted to be busy with 18 patients presenting over the time RD was there. Those 18 presentations were triaged as none Category 1; two Category 2; five Category 3 and eleven Category 4. Four patients were already in the department when RD arrived, three other patients arrived at about the same time as he did and ten patients arrived after that. Five patients remained in the Emergency Medical Centre overnight and eleven were discharged during the night. Dr F treated nine patients overnight, three of whom were Category 3 and the remainder Category 4. The review noted RN3 went home early at 12:10am indicating the workload was manageable at that time.

The hospital's review culminated in a suite of recommendations to:

1. develop and implement a cognitive assessment tool for the emergency department
2. work with local residential aged care facilities to develop a handover form and process for resident referrals to hospital
3. implement the Queensland Sepsis Pathway
4. deliver education to develop critical reasoning/critical thinking
5. targeted education for locum medical officers regarding the causes and management of hypotension
6. introduce the Rural & Remote Emergency Queensland Adult Deterioration and Detection System chart
7. education for emergency department staff about the criteria for referral to Intensivist On-Call
8. clinical escalation process reviewed and circulated to emergency department staff
9. review clinical handover processes (from residential aged care facility to hospital; from paramedics for admissions; to After Hours Manager)
10. ongoing education, audit and feedback to staff on clinical documentation standards.

Further advice from Queensland Ambulance Service

The Assistant Commissioner, regional Local Ambulance Service Network subsequently advised that the events of RD's transfer on 23 May 2016 was not a routine encounter. It was standard practice, and the QAS routine experience, that acutely unwell patients from within that Hospital and Health Service were then transferred to the larger regional public hospital for advanced cares.

Independent clinical review

I arranged for an independent doctor from the Department of Health Clinical Forensic Medicine Unit to review the patient records and clinician statements and provide advice as to whether there was a missed opportunity to have prevented RD's death.

The reviewing doctor noted RD received regular nursing, medical and allied health review at the nursing home and considered the timing of his referral to hospital on 22 May was reasonable.

It is apparent there was some misunderstanding by the regional private hospital staff about RD's baseline cognitive functioning, with a presumption of dementia. The reviewing doctor observed that while somewhat lacking in detail considering RD's complex medical background, the Patient Transfer Form completed by staff from nursing home clearly checked his mental status as "normal". It is not clear what further history was provided to Dr F when she called the nursing home but it has been suggested in the material available to me that this information was possibly misinformed.

The reviewing doctor expressed great concern about the minimal initial treatment at regional private hospital Emergency Medical Centre to manage RD's hyperkalaemia and suspected sepsis, and that there was no further investigation of his elevated troponins. Further, many of Dr O's clinical recommendations appear to have been ignored. The reviewing doctor considered that many of the therapeutic interventions commenced at small regional public hospital were clinically indicated many hours earlier at the regional private hospital and in particular, earlier antibiotic therapy, electrolyte correction, inotrope therapy, dialysis and intensive care review could have changed the outcome for RD.

Dr F noted she believed RD's elevated troponin T (185) was "consistent with renal failure". When considering this explanation, the reviewing doctor expressed the following concerns:

- current recommendations are that elevated troponin T likely represents myocardial injury and should not be considered as non-specific increased due to chronic kidney disease. Chronic elevations in troponin T may represent clinically occult myocardial injury associated with uraemia; however patients with chronic kidney disease are at high risk of acute coronary syndrome and so any elevation in troponin T warrants further cardiac investigation with serial troponins at a minimum; and

- while RD had chronic kidney disease, his creatinine was only 137 five days earlier and had since progressed to 675 – this indicated he had severe acute renal failure on the background of mild chronic renal impairment. Consequently, the reviewing doctor considered that to conclude that a highly elevated troponin T was the result of his renal impairment was "doubtful".

The reviewing doctor expressed concern about the appearance that once RD had been accepted at the larger regional private hospital, the focus of care "*became tunnelled and focused on moving him out of the emergency department*." It appears

that all of the clinicians (medical and nursing) involved in RD's care at the regional private hospital, with the benefit of hindsight, seem to agree that he was too unstable to be transferred. One nurse appears to have even considered this at the time but it is unclear why none of them escalated their concerns. The reviewing doctor concluded that overall, the combined clinical decisions made by the nursing and medical staff at the regional private hospital were "*concerning and the omissions to RD's care directly contributed to his catastrophic deterioration in the back of an ambulance. It is possible that if he had received earlier treatment there may have been a different ultimate outcome*."

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.

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 save 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 piloted an emergency department adult sepsis screening tool and pathway at the Gold Coast University Hospital emergency department. I am advised that a report on the outcomes of the pilot project is currently being prepared.

As at July 2018, 16 public hospitals have joined the Adult and Paediatric Sepsis Breakthrough Collaborative. This initiative will enable teams from multiple hospitals to test and share ideas to achieve reliable recognition and treatment of sepsis patients presenting to Queensland's larger Emergency Departments.

Planning is underway to incorporate a digital sepsis module in the digital hospital record systems being rolled out across Queensland public hospitals.

Findings required by *Coroners Act 2003*, s. 45

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

How he died: RD died from acute natural causes. Collectively, the locum emergency doctor and the nurses responsible for his care during his stay at the regional private hospital Emergency Medical Centre over 22-23 May 2016 failed to recognise he was critically unwell with possible sepsis and failed to manage him appropriately. The doctor and nurses responsible for his care have since appropriately recognised that RD should have remained at that hospital and been escalated for discussion with and/or review by the Intensivist On-Call, rather than be transferred by ambulance to the larger regional private hospital in the early hours of 23 May 2016. In particular, the locum doctor failed to act appropriately on the blood test results and her knowledge of RD's downward trending blood pressure when she actioned the inter-hospital transfer at 2:10am. She has since acknowledged she should have contacted the Intensivist On-Call about him. Similarly, the nurses failed to act appropriately on their knowledge of his hypotension at the time of his last set of observations at 3:40am and did not provide a fulsome handover to the paramedics prior to transfer not long after that. These failures occurred in the context of a busy night in the Emergency Medical Centre and he was unaccompanied by anyone to advocate for him. While the locum doctor made an assessment that RD required hospital admission when she first reviewed him, she did not have the opportunity to arrange that admission to another hospital until some four hours later. The fact she was still prepared to action the transfer with the knowledge of his worsening hypotension at that time, as were the nurses less than hour later, suggests they were collectively focused on getting him out of the Emergency Medical Centre. Instead, they should each have reassessed his clinical status and whether he was in fact stable enough at those times for the inter-hospital transfer to proceed as planned. Their collective failure to do so meant that RD did not receive the treatment his clinical condition required – earlier antibiotic therapy, electrolyte correction, inotrope therapy, dialysis and intensive care review could have changed the outcome for RD.

I am satisfied the regional private hospital has carefully considered the shortcomings of the care RD received

in the Emergency Medical Centre and has taken appropriate steps - implementing a sepsis pathway and emergency patient early warning observation tool and educating emergency medical centre clinicians about clinical escalation processes and criteria for referral to the Intensivist On-Call – to enhance early detection, treatment and management of sepsis and clinical deterioration.

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

Place of death: Regional public hospital

Date of death: 24 May 2016

Cause of death:

1(a) Septic shock
2 Ischaemic heart disease

I close the investigation.

Ainslie Kirkegaard
Coronial Registrar
CORONERS COURT OF QUEENSLAND
20 August 2018