CORONERS COURT
OF NEW SOUTH WALES

Inquest:	Inquest into the death of Dr Malay RANA
Hearing dates:	14, 15, 16 & 17 May 2018
Date of findings:	6 June 2018
Place of findings:	State Coroner's Court, Glebe
Findings of:	**State Coroner Les Mabbutt**
Catchwords:	CORONERS- Cause and manner of death, medical treatment, cystic fibrosis patients
File number:	2015/359405
Representation:	Counsel Assisting Ms Donna Ward instructed by Mena Katawazi Office of the General Counsel NSW Department of Justice Family Mr Divyesh Rana and Mrs Meenal Rana Western Area Health Service Ms Lynn Boyd instructed by Lucy Pinnock Crown Solicitors Office Associate Professor Peter Middleton Mr Mark Lynch instructed by Paul Tsaousidis Avant Mutual Group Dr Janaki Antonypillai and Dr Anna Issacs Mr Kim Burke instructed by Zoe Hamilton HWL Ebsworth Dr Samual Rajadurai Ms Ragni Mathur instructed by Suzanne Wallace Moray & Agnew Lawyers

Findings pursuant to s 81(1) of the Coroners Act 2009	**Identity of the deceased** Dr Malay Rana **Date of death** 28 April 2015 **Place of death** Westmead Hospital **Cause of death** Loss of airway control and blockage due to aspiration from complications of a small bowel obstruction. **Manner of death** Failure to diagnose clinical deterioration whilst receiving treatment as a patient at Westmead Hospital
Recommendation:	To the Minister of Health, I recommend the establishment of a specialized ward for the care and treatment of patients diagnosed with cystic fibrosis at Westmead Hospital

These are the findings of an inquest in the death of Dr Malay Rana

Introduction

1. Dr Malay RANA was born on 5 February 1988 and died whilst receiving medical treatment at Westmead Hospital on the morning of 28 April 2015 at 27 years of age. Dr Rana's mother Meenal Rana and his father Divyesh Rana requested throughout the course of the inquest and in these findings that Dr Rana be referred to as Malay.

Why was an inquest held?

2. The role of the Coroner pursuant to s 81 of the *Coroners Act* 2009 is to make findings regarding:
    - The identity of the deceased
    - The date and place of that person's death
    - The cause and manner of that person's death.

    A Coroner may also make recommendations in accordance with s 82 of the Act concerning any public health or safety issues arising out of the death.

3. An inquest was conducted to determine the cause and manner of Malay's death and to examine the medical treatment provided at Westmead hospital prior to his death. An autopsy was conducted at Westmead Hospital following Malay's death. A review of that autopsy indicated an exact cause of death was unable to be determined.

Malay's life

4. Malay was born with cystic fibrosis. It is a genetic condition that affects both the respiratory and digestive system. A malfunction in the exocrine system responsible for producing mucus in the body results in a thick, sticky build-up of mucus in the lungs, pancreas and other organs. In addition, the mucus in the pancreas prevents the release of digestive enzymes that would otherwise allow the body to break down and absorb nutrients from food. Cystic fibrosis patients must work very hard to maintain a healthy weight and level of general health.

5. Malay's daily routine commenced at 4.30am. Malay undertook airway clearance that involved medications, a nebulizer, intensive chest physiotherapy, cycles of breathing, chest percussions, coughing, the clearing and loosening of mucus and the use of a breathing mask or mouthpiece. This treatment regime took approximately three hours, every morning. Each evening, regardless of how tired Malay was from his study, work or research this physiotherapy regime had to be repeated again.

6. Malay maintained a healthy weight by consuming nutritionally rich meals, with additional enzyme and vitamin supplements given the issues with nutritional breakdown and food absorption persons with cystic fibrosis confront. Malay kept fit and healthy with a strict exercise regime. Due to this regime of physiotherapy, diet, fitness and dedicated motivation Malay was only hospitalized 4 times in his lifetime. A very low figure for a person with cystic fibrosis.

7. Both of Malay's parents assisted Malay with his daily physiotherapy involving among other things chest percussions, coughing, expulsion of mucus and use of respiratory apparatus. Meenal ensured Malay had nutritious meals and devoted herself to caring for Malay. Divyesh supported the family, provided encouragement and as he described in his evidence, provided entertainment for Malay.

8. Malay was a keen sportsperson. Despite his diagnosis, he participated in the City to Surf and karate. Malay played cricket, tennis, table tennis and chess. Cricket was played outside and inside the house. Malay not only played sports but keenly followed the Sydney Swans, Parramatta Eels and was a loyal Australian Cricket fan.

9. Malay excelled academically, being awarded the NSW Premier's award for all round excellence in the HSC. He studied medicine and in 2011 graduated with Honours. Malay's academic achievements resulted in his appointment as a Pathology

Registrar after 1 year of internship instead of the usual 2 year period. Malay published articles in international journals and presented papers at conferences in Australia and overseas.

Cystic Fibrosis

10. Cystic fibrosis is the most common lethal genetic disorder in Australia, affecting 1 in 2,500-2,800 births. However, in the opinion of Associate Professor Middleton, the Director of Respiratory Medicine Westmead Hospital, cystic fibrosis is one of the "success stories" of modern medicine. Over the past 50 years the lifespan of cystic fibrosis patients has increased. In the 1960s the median life span of a cystic fibrosis patient stood at 2 years. Due to medical advances in treating patients, life expectancy has increased to:

- 1970s 15 years
- 1990s 30 years
- 2010 40 years of age.

Respiratory disease is the major cause of morbidity and mortality for cystic fibrosis patients.

Distal Intestinal Obstruction Syndrome (DIOS)

11. It is not unusual for cystic fibrosis to cause small bowel obstructions (complete or incomplete) due to the accumulation of faecal material within the bowel. This is referred to as a DIOS. "Distal" means distant from centre and the blockage is often seen at the point where the small bowel joins the large bowel. This condition is typically treated with oral laxatives to draw fluid into the bowel to help remove impacted stool and enemas.

Small Bowel Obstruction

12. This is a mechanical obstruction of the small bowel. The most common cause relates to adhesions (often at points of prior surgery) that result in obstruction. The treatment is nil by mouth, the insertion of a nasal gastric tube (NGT) to drain fluid from the stomach due to the blockage in order to avoid aspiration and/or vomiting. There is no oral intake to avoid placing pressure on the obstruction that may result in further damage or perforation/rupture of the intestinal wall.

Events leading up to Malay's death

13. In March 2014 Malay was treated non-operatively at Wollongong Hospital for Distal Intestinal Obstruction Syndrome. In April 2015 Malay experienced similar symptoms. He self-medicated with lactulose on Friday 24 April but by Sunday April 26 his discomfort had progressed to the point where he presented for treatment to Westmead Hospital.

26 April 2015

14. Westmead is one of the two specialist hospitals in NSW for the treatment of Cystic Fibrosis patients. Associate Professor Peter Middleton is the Centre Director, Adult Cystic Fibrosis Service, a doctor Malay respected and trusted. On 26 April 2015 Malay attended Westmead Hospital for this specialist care.

15. Following Malay's admission a chest and abdomen x-ray was performed at about midday. The abdomen x-ray showed multiple dilated loops of slightly thickened small bowel with faecalisation or thickened secretions consistent with obstruction. The two most likely explanations were DIOS or SBO caused by adhesions from earlier surgery. Malay had had both a laparotomy and ileostomy as an infant and a hernia repair about five years prior.

16. It was determined to initially treat Malay conservatively but under the joint care of the respiratory and surgical teams at Westmead Hospital. It was proposed once the cause of the obstruction had been identified appropriate treatment would follow. Surgery is considered a last resort for cystic fibrosis patients due to compromised respiratory function.

17. Malay was given fleet enemas on Sunday to treat the presumed episode of DIOS. Being under the joint care of the surgical team meant if it became apparent that the obstruction was caused by adhesions, that team would be well placed to make early decisions about surgical intervention.

18. Professor Henry Pleass, the on-call Consultant for the Acute Surgical Unit reviewed Malay at about 6pm, Malay had already been assessed by the respiratory doctors. Professor Pleass formed the impression that Malay had a small bowel obstruction secondary to adhesions rather than DIOS, he advised that a nasal gastric tube (NGT) be inserted on free discharge with 4 hourly aspirations to ensure all fluid had been

drained. The NGT was inserted shortly afterwards and 600mls of clear fluid was drained.

19. Dr Janaki Antonypillai, the night medical registrar, thereafter reviewed Malay at the request of Dr Patel, respiratory consultant. They discussed the CT results and Dr Patel said that Malay should be managed with the administration of aperients (oral laxatives). Dr Antonypillai contacted the surgical registrar to advise him of Dr Patel's plan and the registrar was happy to proceed. The surgical side of Malay's care was to be handed over from the Acute Surgical Unit to the Upper Gastrointestinal Surgery team who would continue to liaise with the respiratory doctors.

27 April 2015

20. In the early hours of Monday 27 April 2015 Malay reported increased pain. He aspirated 600mls of greenish fluid at 1.30am but nothing at 5.30am. In the meantime however there was 600mls of darker greenish fluid in the free drainage bag.

21. Malay was seen by the respiratory registrar later that morning who noted the treatment plan was to continue with the lactulose treatment with an increased dosage and an enema. Malay was to continue his physiotherapy and to have a type of lung function test called a spirometry.

22. At about 8.45am on Monday 27 April Malay was reviewed by a Surgical Consultant, Associate Professor Vincent Lam. Based upon what Professor Pleass had told him, Associate Professor Lam considered Malay's abdomen seemed less tender than the previous day. Associate Professor Lam decided not to take Malay to theatre given the timeframe and no obvious peritonitis, ischemia or free gas in his diaphragm which would have signalled a perforation. Associate Professor Lam had not reached a conclusion as to whether the small bowel obstruction was caused by adhesions or thickened stool.

23. During this consultation Malay asked Associate Professor Lam when the NGT could be removed. It was not removed at that time. A physiotherapy note for 11.15am noted Malay was not tolerating physio and was complaining of pain.

24. Malay was then reviewed by Associate Professor Middleton. There was still an issue whether Malay was suffering from DIOS or a small bowel obstruction. Associate Professor Middleton considered DIOS more likely. Given the concern that the NGT

was interfering with Malay's ability to perform his physio exercises and chest compressions and coughing to expel mucus, a decision was made to remove the NGT at about noon on Monday 27 April.

25. Later in the afternoon Dr Anna Isaacs the night surgical registrar received a hand over from the day surgical registrar. Malay had been moved from one of the surgical wards to the respiratory ward. Associate Professor Middleton saw Malay in the corridor as he was leaving at about 6pm Monday night. Malay was walking around without any vomiting, was in the same or slightly less discomfort but was apparently feeling better without the NGT.

26. At about 8pm Malay was reviewed by Dr Samuel Rajadurai, one of the junior medical officers who examined Malay in the presence of Malay's parents. Dr Rajadurai attempted to contact Associate Professor Middleton but was unable to reach him. Dr Rajadurai did not leave a message. Dr Rajadurai then contacted Dr Isaacs the surgical registrar on duty, by telephone. Dr Isaacs did not examine Malay but a treatment plan was recorded in the clinical notes. No decision was made to reinsert the NGT.

28 April 2015

27. Shortly after midnight nursing staff called for a medical review. Across that night shift Dr Antonypillai was the medical registrar. Not long after midnight Dr Antonypillai was contacted by the junior medical officer, Dr Doane-Vance who was covering the respiratory ward and had been asked to review Malay by nursing staff. In discussion with Dr Antonypillai it was agreed that, amongst other things, they would undertake a "septic screen" for Malay, a series of tests to evaluate possible causes for the fever he was experiencing. This included a chest x-ray and abdominal x-ray.

28. Dr Antonypillai intended to review Malay herself but was detained caring for another very ill young pregnant patient and other Pre-Arrest Criteria for Escalation (PACE) and Advanced Life Support (ALS) calls. At About 2.45am she was again contacted by Doctor Doane-Vance. Dr Antonypillai advised to keep Malay upright and commence IV antibiotics.

29. Dr Antonypillai reviewed Malay at about 3.00am but did not make a note. Following a discussion with Malay, the NGT was not reinserted. At about 5am Dr Antonypillai returned to review Malay. Dr Antonypillai attempted to contact the surgical registrar

via pager twice to discuss re-insertion of the NGT but did not receive a response. The decision to reinsert the NGT was left for the morning team.

30. Malay's parents attended the ward early on the morning of Tuesday 28 April. They observed Malay looking very ill and hearing him call out that he couldn't breathe. A PACE call was made around 6.40am.

31. Dr Antonypillai responded to the PACE call and recognised Malay's bed number. She entered the room and saw Malay sitting upright, vomiting copious amounts of brown/yellow fluid into a bag being held by his father. She escalated the call to an ALS call. Malay was in respiratory distress with a decreased level of consciousness. Cardio Pulmonary Resuscitation (CPR) was commenced with several doctors present but Malay could not be saved. A decision to cease CPR was made at 7.17am on Tuesday 28 April 2015.

The following issues were considered at inquest relating to Malay's unexpected death and the care and treatment he received at Westmead hospital:

a) Was there proper communication between the respiratory and surgical teams with respect to dual care or was the respiratory team providing the primary care?

32. The senior doctors understood Malay's admission was to be managed jointly. On the morning of 27 April Associate Professor Lam the Surgical Consultant reviewed Malay and made a decision not to take Malay to theatre. On his examination the abdomen appeared less tender and there were no other symptoms signifying infection or perforation. Any decision on surgical intervention was postponed. Following that review around lunchtime Associate Professor Middleton the Respiratory Consultant reviewed Malay and elected to remove the NGT.

33. The consultation with the surgical team about removing the NGT was a telephone call between the Registrars of both teams. The Respiratory Registrar made an entry in the notes that read "*Spoke to ASU (Dr Tseros) ASU happy for NGT removal*" Dr Tseros, the Surgical Registrar involved in the conversation states he was later surprised to read that note because he does not recall expressly agreeing to the removal of the NGT, but rather deferred to the respiratory team. Malay was transferred from the surgical ward to the respiratory ward.

34. Later in the evening following a medical review there was no decision by Dr Isaacs the surgical registrar to replace the NGT. The on call respiratory consultant was not contacted. At 3 and 5 am on the morning of 28 April no decision was made by Dr Antonypillai, the medical registrar to replace the NGT tube on the basis the surgical team should be consulted. The surgical registrar did not respond to paging and the decision was left for the treating team later in the morning.

35. Dr Phil Truskett AM the Court appointed expert is a senior surgeon at Prince of Wales Hospital. In Dr Truskett's opinion despite the view of the senior clinicians that a dual care model was operating, the impression of junior staff was that the primary care was under the respiratory team, even the management of the small bowel obstruction. Dr Truskett considers this a major communication issue that was amplified by the NGT tube removal being authorised by the most junior member of the surgical team.

36. I accept Dr Truskett's opinion on this issue. Despite the view of the senior clinicians that a dual care model was operating, I find there was confusion among junior medical staff and that they considered primary care was under the respiratory team.

37. I find the communication between the treating teams lacked proper direction and supervision by the senior doctors on both teams resulting in important clinical decisions being made without proper consultation at the appropriate level. That resulted in the respiratory team providing Malay's primary care when dual care was required.

b) **Why was the nasal gastric tube removed?**

38. I am satisfied that Associate Professor Middleton made a clinical decision balancing the benefit of removing the tube against the small risk of the obstruction being a small bowel obstruction. The NGT was preventing Malay undertaking his normal daily physio and mucus clearing. Malay could not take a full breath and his ability to cough and expel mucus was reduced. Associate Professor Middleton discussed the removal of the tube with Malay and indicated Malay was happy for the tube to be removed.

39. The decision to remove the NGT in the first instance by Associate Professor Middleton was a clinical judgement to assist Malay maintain his respiratory capacity. It was made on the basis there was still a small risk of a SBO. Whilst Associate Professor Middleton could not know how events were to unfold that evening and into

the morning, managing that risk in hindsight as conceded by Associate Professor Middleton could have been communicated differently.

40. Associate Professor Middleton indicated had he answered Dr Rajadurai's phone call that evening, he would have recommended the NGT be replaced and Malay moved to a the High Dependency Unit overnight for monitoring. In hindsight Associate Professor Middleton stated he should have placed a written direction to junior staff on the notes for the NGT to be inserted if the abdomen was distended or there were no indications of Malay's condition improving.

c) What decisions were made regarding whether to reinsert the nasal gastric tube, including attempts to contact Associate Professor Middleton and Malay's wishes?

41. At 8pm on the 27 April, following notification by Malay's parents to the ward nurse that Malay had abdominal distension and was uncomfortable Dr Rajadurai was called to review Malay. Dr Rajadurai was a junior doctor on the respiratory ward. He also had responsibilities for several wards. He noted the NGT was removed earlier that day. He reviewed Malay with Malay's parents present.

42. Dr Rajadurai evidence was he could not recall who raised the NGT issue and that he would need to discuss it with the senior doctors. His memory was that Malay was not keen on having the NGT reinserted. Dr Rajadurai recalls using words to the effect if there was any nausea or vomiting the NGT may have to be reinserted.

43. Mrs Rana's evidence was that Dr Rajadurai at no stage suggested reinsertion of the NGT. The issue of the reinsertion was raised by Malay and Mr Rana. Mr Rana states he suggested the NGT be replaced and Malay supported it. Both parents denied Malay objected to the reinsertion of the NGT and that Dr Rajadurai was requested to ring Associate Professor Middleton urgently.

44. Dr Rajadruai attempted to ring Associate Professor Middleton via the hospital switch. Associate Professor Middleton was not the on call consultant that evening. Dr Rajadurai stated he rang twice, which was his usual practice. No message was left. When Associate Professor Middleton noticed the missed call, his phone display did not nominate a call back number due to the mode of operation of the hospital switchboard. The hospital did not call Associate Professor Middleton back.

45. Dr Rajadurai states he then rang the surgical registrar Dr Isaacs, discussed Malay's condition and obtained a treatment plan over the phone. He returned and informed Malay and Mr and Mrs Rana he could not contact Associate Professor Middleton and that he had called the surgical registrar and discussed a treatment plan. Both Mr and Mrs Ranas' recollection was Dr Rajadurai only informed them he could not contact Associate Professor MidIdleton and he would try and contact the surgical registrar. They do not recall any further information or consultation from Dr Rajadurai before leaving the hospital at 10pm.

46. It is difficult to resolve the various conflicts in the recollection of Mr and Mrs Rana and Dr Rajadurai for several reasons. Mrs Rana made notes some weeks after Malay's death. Those notes were relied on jointly by herself and her husband to assist their recollection. Other witnesses made statements sometime after the event and all had to recollect in the witness box conversations that took place over 3 years ago.

47. I accept Mr and Mrs Malay raised concerns with nursing staff about Malay's condition initially and reinserting the NGT. I found both Mr and Mrs Rana credible witnesses and their concern for Malay's condition was self evident.

48. However on several other occasions; to Associate Professor Lam, Associate Professor Middleton and later to Dr Antonypillai, I am satisfied Malay indicated either he wished to know when the NGT could be removed, indicated his discomfort with the tube or indicated he preferred not to have it reinserted unless absolutely necessary. The tube was clearly causing Malay issues with his daily therapy, lung function and discomfort. Given these conflicts I am unable to come to a positive factual finding on the issue of Malay's wishes to an appropriate level of satisfaction. Ultimately, Dr Rajadurai's view that Malay was reluctant was conveyed to Dr Isaacs.

49. Mr and Mrs Rana also dispute that Dr Rajadurai returned to the ward and informed them he had contacted the surgical registrar Dr Isaacs and there was a treatment plan. However, I find on the evidence there was a phone call from Dr Rajadurai to Dr Isaacs, a review took place over the phone and a treatment plan was recorded in the medical notes by Dr Rajadurai. Given the conflicting evidence on this issue I am also unable to make factual findings to a comfortable level of satisfaction on this point.

The phone call between Dr Rajadurai and Dr Isaacs

50. Dr Isaacs was the evening surgical registrar on 27 April and responsible for a large number of patients throughout the hospital including both acute wards, all surgical patients, new admissions from the Emergency Department and any trauma calls. In addition, Dr Isaacs had to undertake any operations that were required. In those circumstances Dr Isaacs had to triage, as best she could in the circumstances, which matters had to take priority. Dr Isaacs had already completed a day shift earlier.

51. Dr Rajadurai rang Dr Isaacs regarding Malay's presentation. Some of the conversation is in dispute. Both doctors agree a treatment plan was provided over phone. The notes made by Dr Rajadurai contain no reference to any discussion/decision regarding the NGT. At the time Dr Isaacs did not have access to Malay's clinical notes/observation charts. Dr Rajadurai agreed he did not ask Dr Isaacs to come and review Malay, but asked her whether she should. Dr Isaacs retained no notes of the conversation.

52. Dr Isaacs conceded in evidence the discussion regarding reinserting the NGT only related to "*whether we should put it back in"*. Ultimately there was no decision to reinsert the NGT and Dr Isaacs did not review Malay personally. Dr Isaacs stated it was a short 5 minute discussion. Based on that conversation she did not consider a CT scan would be beneficial given concerns with Malay lying down and risks of vomiting or aspiration on the information provided.

53. Dr Isaacs's evidence was she asked if Dr Rajadurai wanted her to attend, if so it would be at least one hour given her workload. She states Dr Rajadurai advised he would check on the patient in an hour and advise. She was not called back. She did not recall Dr Rajadurai telling her he already attempted to contact Associate Professor Middleton.

54. The treatment plan recorded was; "*nil by mouth, keep patient upright, microlax enemas, monitor oxygen saturations, not for CT at his stage, to be reviewed by Associate Professor Middleton AM, notify RMO if any concerns"*

55. Dr Rajadurai's evidence was he returned to the ward at approximately 9pm to check on Malay. His opinion was Malay's condition had improved and he was feeling more comfortable. There was no note of this review on the records or any observations recorded at this time. When questioned regarding the heart rate and temperature readings on the observation chart, Dr Rajadruai did not consider they indicated a

need for a further review. He informed Malay to advise the nurses if he was feeling nauseous or started vomiting and instructed the nursing staff to monitor Malay. Dr Rajadurai did not call Dr Isaacs for a second review.

56. Dr Isaacs was taken through the observation chart in evidence. She did not consider Dr Rajadurai provided her enough information at the time. Her view in hindsight and with the knowledge of the tragic result the next morning was that indicators pointed to sepsis, most likely an infection. With all available information to hand on the evening she would have advised a PACE call, and reviewed Malay personally.

57. At 3am Dr Antonypillai attended on Malay. She had planned to attend earlier but other emergencies delayed the review. Dr Antonypillai states there was a discussion with Malay that his NGT might have to be re-inserted given increasing abdominal discomfort. Dr Antonypillai states Malay indicated he preferred not to have the tube reinserted unless it was absolutely necessary. Dr Antonypillai agreed to delay the reinsertion of the NGT as she considered Malay at that time was clinically stable. She recalls being called away for another patient but made no notes at time.

58. At 5am she reviewed Malay a second time, attempted to page the surgical registrar to discuss reinserting the NGT, there was no answer so the decision regarding the NGT was left for the morning team.

Conclusion

59. Having considered the evidence of Dr Rajadurai and Dr Isaacs, I am satisfied not all of the information relevant to Malay's condition at the time was relayed to Dr Isaacs. That is taking into account Dr Isaacs was the senior doctor. The lack of any discussion/decision regarding the NGT being recorded by Rajadurai is an important factor.

60. Dr Rajadurai's evidence that at 9pm Malay's clinical presentation did not warrant a further review or escalation is not supported on the evidence. Dr Isaacs did not have access to Malay's medical records which contributed to no clear decision firstly to reinsert the NGT and secondly for a personal review of Malay by Dr Isaacs. I find a failure by either doctor to contact the on call respiratory consultant severely impacted on Malay's treatment. In the early hours of 28 April on two occasions Dr Antonypillai delayed any positive decision to re insert the NGT.

d) Were there indications the suspected small bowel obstruction was resolving and did the treatment plan proceeded on that basis?

61. Associate Professor Middleton, Director of Respiratory Medicine and Professor Pleass, Director Transplant Surgery gave joint evidence on this issue. Professor Pleass stated cystic fibrosis patients are at risk with surgery due to reduced lung function. The surgical team do everything possible to avoid surgery. The early indications on the assessment on the morning of 27 April was Malay was feeling better, there were no signs of perforation or loss of blood. Given the concerns regarding the option of surgery being conducted there was seen to be no urgency for a decision to be made regarding surgery.

62. Associate Professor Middleton considered DIOS the most likely diagnosis given the pre admission history and Malay's previous DIOS episode. His abdominal examination of Malay around midday of 27 April indicated bowel sounds that were consistent with a diagnosis of DIOS. With small bowel obstructions the lower bowel is generally empty opposed to a DIOS episode where the lower bowel still has contents. Both witnesses indicated that small bowel obstructions involve clinical judgements that cannot be fully confirmed by diagnostic tests. Both Doctors agreed in evidence it was most likely Malay may have had a combination of a small bowel obstruction and DIOS (DIOS was not confirmed at autopsy). The prior surgery brought the issue of adhesions into consideration regarding a diagnosis of a small bowel obstruction.

63. Dr Truskett, provided the opinion that Malay's presentation was complex and consistent with cystic fibrosis patients. The high output from the NGT earlier on 27 April was indicative that the obstruction had not resolved. His opinion was there was no clear evidence the bowel obstruction had been resolved. At autopsy a small bowel obstruction was subsequently confirmed. Dr Truskett opinion is that when the issue of sepsis was being considered, appropriate consultation with the surgical team did not take place.

64. I find Malay's treatment plan, taking into account the communication issues outlined above, proceeded on the basis the small bowel obstruction was resolving and DIOS was the most likely diagnosis. The removal of the NGT was another indication to junior doctors that DIOS was the likely diagnosis. I accept Dr Truskett's opinion there was a failure to properly appreciate the output rate of the NGT. I find there were no

definite indications that the small bowel obstruction was resolving in the circumstances.

e) Was there a failure to appreciate Dr Rana's deteriorating condition including a delay in activating treatment escalation calls?

65. For the reasons set out above I find Malay's presentation to Dr Rajadurai and the phone review by Dr Isaacs required the escalation of Malay's care. That did not occur.

66. Dr Antonypillai was the medical registrar on nightshift into the morning of 28 April. Dr Antonypillai was responsible for all surgical patients in the hospital, supervision of five junior medical officers and clinical reviews. Shortly after midnight the Junior Medical Officer on the ward Dr Doane Vance contacted Dr Antonypillai by phone. The information relayed by phone was a previous review on 27 April by the surgical registrar (Dr Isaacs). Increased temperature, elevated heart rate, (tachycardia) the patient was uncomfortable, shortness of breath and only able to take shallow breaths. Malay was sweating, sitting up in bed, had a temperature of 38.6, Heart rate of 130, oxygen saturation at 96% and blood pressure of 136.96.

67. On the information provided Dr Antonypillai determined the following plan: for dehydration, 1 litre bolus IV and pain relief (fentanyl) via IV. A Septic screen was to be performed; blood tests and blood count. Chest X-ray and abdominal X-ray. Given no information there was acute pain in the abdomen, she considered a bowel perforation unlikely. On the information provided Dr Antonypillai did not consider an urgent review was required.

68. Due to competing priorities in the hospital that morning Dr Antonypillai did not make notes at the time and was called away to another patient. By 2:45am Dr Doane-Vance called again indicating Malay had significant discomfort, distension and burping a lot. Pain had decreased. The white blood cells count was elevated. Antibiotics were prescribed.

69. Dr Antonypillai reviewed Malay at about 3.00am but no note was made at the time. Dr Antonypillai stated there was a discussion with Malay that his NGT might have to be re-inserted given increasing abdominal discomfort. Dr Antonypillai states Malay indicated he would prefer not to have the tube reinserted unless it was absolutely necessary. Dr Antonypillai agreed to delay the reinsertion of the NGT.

70. Dr Antonypillai reviewed Malay again at 5am, her impression was Malay was unwell but stable and not acutely deteriorating. Her evidence was "*from the end of the bed*" Malay appeared clinically stable. The abdominal and chest X-ray were viewed as images only on the computer as the reports were not available at that time.

71. Dr Antonypillai attempted to contact the surgical registrar twice by pager to discuss reinsertion of the NGT, there was no call back. She made a decision to delay the reinsertion of the tube on the basis the current management plan was appropriate and the day team would be updated in two hours and a decision could be made then regarding the NGT. Her view was the surgical team were aware of Malay's condition and had been consulted by the respiratory team prior to the removal of the NGT. Her memory was being called away for another review at that time.

72. In evidence Dr Antonypillai conceded Malay was becoming more unwell. On reflection the following information in combination signalled Malay was deteriorating:
    - Raised lactate levels
    - Increase in heart rate
    - Increased bowel loops on the abdominal x-ray
    - Increased temp to 39.4
    - Burping, complaining of pain
    - Still reporting distension.

73. Dr Antonypillai responded to the PACE that was made around 6.40am and upon entering the ward witnessed Malay vomiting large amounts of fluid in the presence of his parents. CPR was commenced, despite all efforts of the ALS team and attending doctors Malay passed away at 7:17am.

74. Dr Truskett provided an opinion that the question of aspiration was not being properly considered. Dr Truskett was also critical that the issue of sepsis was not communicated with the surgical team. He did not consider in the circumstances a decision for Dr Antonypillai to reinsert the NGT required the approval of the surgical team.

Conclusion

75. Whilst acknowledging Dr Rajadurai was a junior doctor and the workload and responsibilities of Dr Isaacs, several indicators should have escalated Malay's

treatment that evening. That did not occur, which was one of a number of missed opportunities by medical and nursing staff to address a deterioration of Malay's condition.

76. Dr Rajadurai's evidence that Malay had improved prior to going off shift is simply not supported by the objective evidence available. The upward trend of observations from that afternoon relating to oxygen saturation, heart rate and temperature, all on the cusp of the yellow zone should have been more fully considered in combination with Malay's clinical presentation.

77. The decision by Dr Isaacs to not personally review Malay also contributed to Malay's deterioration. As the senior doctor in the conversation with Dr Rajadurai, the ultimate decision was with Dr Isaac to determine whether a personal review was necessary. There was also a failure by nursing staff to activate PACE calls during the evening/early morning.

78. Dr Antonypillai's also was operating under a large workload and her first review was by phone and other emergencies took priority delaying her attendance. Whilst she ordered a septic screen, the prescribing of fentanyl masked any pain symptoms that should have identified infection resulting in an escalation of care. The 3am review resulted in a deferral of any decision to reinsert the NGT. The 5 am review was the last clinical opportunity to escalate Malay's care. Dr Antonypillai failed to recognise Malay's deterioration and the need to urgently escalate his treatment that morning.

79. I find there was a failure in the monitoring and medical reviews of Malay on the evening of 27 April and the early morning of 28 April by medical and nursing staff at Westmead hospital. That failure to properly diagnose and provide adequate medical treatment to Malay resulted in his clinical deterioration and death on the ward early on the morning of 28 April 2017.

f) What was the cause of death?

80. An autopsy was conducted at Westmead Hospital on 29 April 2015 by Dr Roushan Ferdous the Pathology Registrar who was supervised by Pathology Staff Specialist Dr Duncan McLeod. An Autopsy Addendum Report was subsequently produced by Dr Mc Leod on 19 April 2018 reviewing the original report. In the comment section Dr McLeod states *"The cause of death is presumed to relate to complications of cystic fibrosis, as detailed in the original reports…. However I do not think that I can*

determine the precise mechanism of death from the autopsy findings. It may be the result of the combination of small bowel obstruction and bronchopneumonia, with a background of chronic lung disease including bronchiectasis"

81. Professor Pleass when taking into account the observations of Dr Antyonypillai at the time of death considered an element of bowel obstruction. A small bowel obstruction was confirmed at autopsy. He considered the aspiration event tipped Malay's oxygen levels down to a point his heart stopped.

82. Associate Professor Middleton considered the cause of death was an aspiration event. In his view generally aspiration events causing death are not so immediate. His opinion was there was an earlier aspiration, most likely in the preceding 12 hours that further comprised Malay's respiratory system. The lack of a positive diagnosis at autopsy of DIOS he considered may be indicative that the DIOS had actually been treated.

83. A lack of any substantial amount of foreign matter in the lungs was also identified at autopsy. Associate Professor Middleton considered that was consistent with the resuscitation attempts that took place over a considerable period of time involving the clearing of airways.

84. Dr Truskett also considered a prior undiagnosed aspiration event, due to the removal of the NGT. In Dr Truskett's opinion given the profuse aspiration and vomiting that took place in the context of a small bowel obstruction the cause of death was loss of airway control due to an airway blockage, due to complications of cystic fibrosis and a small bowel obstruction.

Conclusion

85. Whilst cystic fibrosis comprised Malay's respiratory system, a small bowel obstruction with adhesions was confirmed at autopsy. I accept the opinion of Dr Truskett that there was a prior undiagnosed aspiration that became septic. That view is supported by Associate Professor Middleton and the nature of Malay's deterioration set out above. I find the small bowel obstruction the principal contributing factor to the aspiration event. Accordingly, I find the cause of death was loss of airway control and blockage due to aspiration from complications of a small bowel obstruction.

Is it necessary or desirable to make any recommendations pursuant to s 82?

System changes at Westmead hospital

86. Dr Roslyn Crampton the Chief Medical Officer of Westmead hospital gave evidence of a number of changes to procedure, systems, training and education. At the commencement of her evidence, Dr Crompton apologised to Malay's family in court on the behalf of the hospital for aspects of Malay's care that fell short of the expected standard.

The use of the Distal Intestinal Obstruction Syndrome (DIOS) flowchart in practice

87. In December 2016 Professor Pleass and Associate Professor Middleton developed and jointly published a Guideline for the treatment DIOS. A large number of junior doctors rotate and undertake their training at Westmead hospital. A guideline cannot replace proper clinical judgement. The purpose of the guideline is to ensure joint referral to both treating teams at the senior level occurs and a continuity of dual care. The DIOS guidelines also directs treatment where there is suspected DIOS but no clear diagnosis to assist registrars or junior medical officers with little experience or expertise with cystic fibrosis patients.

88. Associate Professor Middleton and Professor Pleass gave evidence of the prohibition in the guideline/flowchart for the use of narcotics by junior doctors. Narcotics, such a fentanyl, can only be approved under the guideline by the Consultant Medical Officer in the High Dependency Unit. This is on the basis narcotics will mask any pain that is a symptom of infection/sepsis. The flowchart also provides clear requirement for decisions to be made in consultation with the Consultants. Likewise any decision to remove a NGT is to be determined by the senior doctors on both teams.

89. Use of electronic records at Westmead hospital now allow for the DIOS guidelines/flowchart to be placed on the clinical record for the attention of junior doctors, with a hyperlink to highlight the policy where the junior doctor may have little experience in the treatment of cystic fibrosis patients.

Joint management of cystic fibrosis patients presenting with small bowel obstruction.

90. Both Professor Pleass and Associate Professor Middleton advised of the current joint management procedures in place at Westmead Hospital. Decision making for cystic

fibrosis patients is determined at the consultant level with clear lines of communication between Professor Pleass and Associate Professor Middleton.

91. The change to electronic records in the hospital in 2017 now allows both treating teams to be clearly identified on the medical records. Whilst it is acknowledged the electronic records only allow for a primary treating team at the top, there being only one box, the structure of the electronic records now provides for two or more treating teams to be included.

92. There has been closer collaboration between the Surgical, Gastroenterology and Respiratory teams regarding the treatment and management of cystic fibrosis patients. The hospital has also undertaken a number of simulation exercises in involving cystic fibrosis patients with bowel obstruction. The exercises allowed junior medical officers a clearer understanding of the requirement to escalate treatment for patients in the yellow zone and the importance of PACE and ALS calls. An audit by the hospital using the electronic data indicated a 96% compliance with Red Zone criteria.

Identifying cases where the on-call consultant should be contacted.

93. Dr Crampton indicated a review of Malay's case indicated confusion regarding when the on call consultant should be called. Training and education has occurred with junior medical officers regarding clear criteria for calling the on call consultant. This training and education is now inbuilt into every new junior medial officer rotation at the hospital.

94. In addition to this training, a morning medical round was introduced in August 2015. Nightshift junior medical officers discuss overnight patients with the consultants. It ensures policies regarding calls to consultants and PACE and ALS guidelines have been followed. It provides valuable feedback to junior staff from senior doctors.

95. The Hospital guidelines for "Explicit Criteria: Notification of the On Call Consultant" has been redistributed to all medical staff.

Hospital switch board and Caller ID issues

96. Inquiries with the telecommunications service provider indicated caller ID numbers cannot be displayed through the hospital switchboard. To address this issue the hospital has implemented several changes:

- Procedure by switchboard staff to leave a voice message if there is no answer
- If a message is not left, a record is made by switchboard staff of the person placing the call and whom they were attempting to contact.
- Mobile phones are now provided to medical registrars on duty to call consultants.
- Consultants may now contact registrars directly on this phone if they have concerns regarding any of their patients.
- All medical staff contacting consultants must leave a voice mail message that also includes the patient's name and identifying medical record number and the name of the caller.

Identifying patients who are clinically deteriorating in accordance with the "Between the Flags" policy.

97. Dr Crampton gave evidence regarding the existing policy in operation at Westmead Hospital and specific requirements for a mandatory clinical review by the Primary Care Team or after hour resident medical officer where any patient observations are within the "Yellow Zone". If no review occurs within 30 minutes the matter is escalated to a PACE or ALS call. There is no discretion for a junior medical officer in these circumstances other than to escalate the care of the patient for review by a more senior doctor. The purpose of the policy is to ensure patients within the Yellow Zone are reviewed by a senior doctor.

98. For nursing staff if a patient has not been reviewed within 30 minutes the call must be escalated into the Red Zone, an ALS call. Where a patient remains in the Yellow Zone for one hour following the implementation of a management plan, or there is deterioration, this will activate an ALS call.

99. Training has taken place within the hospital using, with the permission of Malay's family, Malay's specific clinical case. The circumstances surrounding Malay's death have been used in the education and teaching of medical staff. A review was undertaken by Dr Crampton of medical staff and the Director or Nursing regarding the failure of staff to activate a PACE call. Several reviews have taken place with nursing staff with further education of criteria for Yellow Zone indicators and the requirement for escalation via PACE or ALS calls where Yellow Zone criteria remain.

100. Dr Crampton acknowledged in Malay's case junior staff knew when to call but they did not appreciate a need for continuing escalation if the patient did not improve. Malay's story is told in training and education to reinforce the need to escalate and re escalate if required.

101. The ability of registrars who are called to review a patient by phone to make fully informed decisions has been assisted by the electronic medical records system. This now allows both doctors to have a discussion whilst both reading the same clinical notes, observations and other material at two different locations in the hospital. The hospital has also offered this facility to consultants via remote computer access.

102. In addition a program, REACH that stands for "*Recognise, Engage, Act, Call, Help is on the Way*." allows family members, independent of ward staff, to activate a ALS call on their own initiative to escalate patient care via the hospital switch board. Ward staff are responsible for providing information of the REACH program to families/carers of patients. A review of this policy indicated there has not been a large increase of PACE or ALS calls via the REACH program.

Increased staffing levels

103. As indicated above, the overall responsibilities of both Dr Isaacs and Dr Antonypillai throughout the hospital on the evening and night shift impacted their ability to attend patients immediately. Since Malay's death the hospital has recognised the demands placed on the registrars within the hospital. One additional medical registrar is now on shift. Two senior resident doctors are now on duty, one in the high dependency unit, the second in the surgical high dependency unit to help free up the surgical and medical registrars to attend reviews throughout the hospital.

Conclusion

104. I have carefully considered firstly the response of the hospital to Malay's death and secondly the implementation of changes to systems, protocols and the training and education of staff in the hospital. The changes made to joint care models, improved communication between the treating teams, policy and flow charts will ensure improved patient care and assist junior doctors into the future. Likewise the access to electronic medical records by reviewing doctors throughout the hospital. New phone and switchboard procedures and an acknowledgement of the need for additional staff all address in my view the principal issues.

105. That the hospital acknowledged failings I consider provides a proper foundation for effective change management. I am satisfied that has occurred. I make no recommendations in that regard.

106. However, it was submitted on behalf of Mr and Mrs Rana that I should consider making a recommendation to the Minister of Health regarding the establishment of a specialist cystic fibrosis ward at Westmead Hospital. When asked regarding such a recommendation, Dr Crampton advised that there are only four dedicated cystic fibrosis beds within the respiratory ward at Westmead hospital. If all four beds are occupied the utmost attempt is made to accommodate that patient in the respiratory ward given the issue of infections that are active for cystic fibrosis patients. She acknowledged patients are living longer with cystic fibrosis. Dr Crampton anticipates a steep growth of cystic fibrosis patients into the future.

107. There is no additional funding available in the hospital budget for the establishment of a specialist ward. Dr Crampton considers the establishment of a specialist cystic fibrosis ward more a financial challenge than a clinical challenge. I also note the benefit a senior resident doctor appointed to a specialist clinical role for all cystic fibrosis patients at the hospital would bring.

108. I am satisfied on the evidence that adult cystic fibrosis patient numbers will increase. Given the complex and specialist treatment required I am satisfied in the circumstances such a recommendation is appropriate.

Conclusion

109. Malay's death occurred due to failures in his care and treatment at Westmead hospital. Malay specifically attended Westmead hospital as it is a hospital that specialises in treating cystic fibrosis patients. That makes Malay's death even more tragic. Malay's death will be used in education and training for medical staff in the future to ensure similar failures do not occur again.

110. Malay lived his life determined that cystic fibrosis would not define him as person. What Malay achieved in his personal and professional life is remarkable and inspiring. Throughout his life Malay undertook a strict treatment regime every day that would challenge many in the community. That Malay was able to achieve so much in his life is a testament to the care and support provided by his parents

Meenal and Divyesh. Malay will be sadly missed and lovingly remembered by his family, colleagues and friends.

111. I wish to offer my sincere condolences to Malay's parents Meenal and Divyesh who throughout the inquest demonstrated their love for Malay and the cherishing of his memory. Despite their grief and loss they demonstrated dignity, respect and their determination that Malay not be forgotten.

112. This inquest heard of their wish to publicly acknowledge the support and encouragement Malay received throughout his life from two doctors. Firstly the Late Dr Peter Van Asperen who treated Malay as a child. Secondly Associate Professor Peter Middleton who offered support and encouragement that assisted Malay in achieving his dream of becoming a doctor. I consider it appropriate to convey their wish in these findings.

113. I thank counsel assisting Ms Donna Ward and her instructing solicitor Ms Mena Katawazi for their assistance.

FINDINGS

Findings under s 81 (1) of the *Coroners Act* 2009

Identity of the deceased
The deceased was Dr Malay RANA

Date of death
28 April 2015

Place of death
Westmead Hospital Westmead

Cause of death
Loss of airway control and blockage due to aspiration from complications of a small bowel obstruction.

Manner of death
Failure to diagnose clinical deterioration whilst receiving treatment as a patient at Westmead Hospital

Recommendation pursuant to s 82 of the *Coroners Act* 2009

To the Minister of Health, I recommend the establishment of a specialized ward for the care and treatment of patients diagnosed with cystic fibrosis at Westmead Hospital

Les Mabbutt
State Coroner
6 June 2018