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CORONERS COURT
OF NEW SOUTH WALES

Inquest:	Inquest into the death of Bruce Hodges
Hearing dates:	1 to 4 February 2021
Date of findings:	12 October 2021
Place of findings:	Coroner's Court of New South Wales at Lidcombe
Findings of:	Magistrate Derek Lee, Deputy State Coroner
Catchwords:	CORONIAL LAW – cause and manner of death, laryngectomy, tracheal stenosis, respiratory rate, respiratory distress, alteration of calling criteria, Clinical Emergency Response System, vital sign observations
File number:	2016/157386
Representation:	Ms E Elbourne Counsel Assisting, instructed by Mr P Armstrong (Crown Solicitor's Office) Mr C Poulden for Ms M Pascoe & Mr W Pascoe Mr N Dawson for RN S Nathaniel Mr M Lynch for Dr P Yeung & Dr A Mahendran, instructed by Avant Law Ms S McCarthy for Dr R Hadi, instructed by HWL Ebsworth Lawyers Mr T Saunders for Dr S Saw, instructed by Meridian Lawyers Mr R Sergi for South Western Sydney Local Health District, instructed by McCabe Curwood

Findings:

Bruce Hodges died on 20 May 2016 at Bankstown-Lidcombe Hospital, Bankstown NSW 2200. The cause of Bruce's death was cardiorespiratory failure due to complications of tracheal stenosis. Bruce's tracheal stenosis was associated with pre-existing tracheostomy (for 20 years) related to a previous diagnosis of squamous cell carcinoma of the left pyriform fossa resulting in total laryngectomy. Following presentation to hospital on 18 May 2016, there was progressive deterioration of Bruce's respiratory condition, from respiratory distress leading to respiratory failure and subsequent cardiac arrest.

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1. Introduction

1.1 On 18 May 2016 Bruce Hodges attended hospital after feeling unwell and short of breath. Bruce was a cancer survivor, having previously been diagnosed with throat cancer 20 years earlier, a diagnosis which resulted in surgical removal of his larynx.

1.2 Bruce was admitted to hospital on 18 May 2016 and over the course of the next two days certain steps were taken to investigate his symptoms. On the morning 20 May 2016 Bruce experienced an unwitnessed fall whilst using the bathroom and was found on the floor by a nurse. A short time later, Bruce had trouble breathing and asked for oxygen before losing consciousness and going into cardiac arrest. Despite resuscitation efforts Bruce could not be revived and was, sadly, pronounced deceased.

2. Why was an inquest held?

2.1 Under the *Coroners Act 2009* (**the Act**) a Coroner has the responsibility to investigate all reportable deaths. This investigation is conducted primarily so that a Coroner can answer questions that they are required to answer pursuant to the Act, namely: the identity of the person who died, when and where they died, and the cause and the manner of that person's death.

2.2 Certain deaths are reportable to a Coroner. Some examples of reportable deaths are where the cause of a person's death is not due to natural causes, or where the cause or manner of person's death may not immediately be known. In Bruce's case, the nature and circumstances of his admission to hospital raised a number of questions regarding his presenting symptoms, whether appropriate steps were taken to investigate and manage these symptoms, and what factors contributed to the unexpected and tragic events of 20 May 2016. Further, the precise cause of Bruce's death, and whether any factors associated with his admission and treatment contributed to it, was not immediately clear. For all of these reasons, an inquest was required to be held.

2.3 In this context it should be recognised at the outset that the operation of the Act, and the coronial process in general, represents an intrusion by the State into what is usually one of the most traumatic events in the lives of family members who have lost a loved one. At such times, it is reasonably expected that families will want to grieve and attempt to cope with their enormous loss in private. That grieving and loss does not diminish significantly over time. Therefore, it should be acknowledged that the coronial process and an inquest by their very nature unfortunately compels a family to re-live distressing memories several years after the trauma experienced as a result of a death, and to do so in a public forum. This is an entirely uncommon, and usually foreign, experience for families who have lost a loved one.

2.4 It should also be recognised that for deaths which result in an inquest being held, the coronial process is often a lengthy one. The impact that such a process has on family members who have many unanswered questions regarding the circumstances in which a loved one has died cannot be overstated.

2.5 Inquests have a forward-thinking, preventative focus. At the end of many inquests Coroners often exercise a power, provided for by section 82 of the Act, to make recommendations. These recommendations are made to organisations and individuals in order to draw attention to systemic issues that are identified during a coronial investigation, and examined during the course of an inquest. Recommendations in relation to any matter connected with a person's death may be made if a Coroner considers them to be necessary or desirable. Where an inquest is able to identify issues that may potentially adversely impact upon the safety and well-being of the wider community, recommendations are made in the hope that, if implemented after careful consideration, they will reduce the likelihood of other adverse or life-threatening outcomes.

3. Recognition of Bruce's life

3.1 Inquests and the coronial process are as much about life as they are about death. A coronial system exists because we, as a community, recognise the fragility of human life and value enormously the preciousness of it. Recognising the impact that a death of a person has, and continues to have, on the family and loved ones of that person can only serve to strengthen the resolve we share as a community to strive to reduce the risk of preventable deaths in the future.

3.2 Understanding the impact that the death of a person has had on their family only comes from knowing something of that person's life and how the loss of that life has affected those who loved that person the most. Therefore it is extremely important to recognise and acknowledge Bruce's life in a brief, but hopefully meaningful, way.

3.3 Bruce was born in 1937, the fourth of seven children. Following a family breakdown and financial challenges Bruce and his siblings were placed in out of home care. Bruce was made a ward of the state in Victoria at the young age of eight. He spent his childhood at a number of different youth accommodation facilities, separated from his siblings, where he reportedly was subjected to institutional abuse. Given these traumatic experiences Bruce absconded from his accommodation facilities a number of times until he reached the age of 18.

3.4 Bruce later met his future wife who already had a daughter of her own and was pregnant with another child. Bruce and his wife settled in the Villawood area of Sydney and had three children together, including a daughter, Michelle. However, this relationship later ended and Bruce left home, having only irregular contact with Michelle and his other children over the following years.

3.5 After Michelle met her future husband, Wayne Pascoe, she was able to reconnect with Bruce and assisted him to move to a new home, back in the Villawood area which held many fond memories for Bruce. Michelle describes this move as bringing much joy to Bruce's life and he revelled in sharing his generous nature with his neighbours: growing vegetables to give to them, helping them mow their lawns, and selflessly giving up his own time to assist with a variety of tasks so that his neighbours had more time to enjoy with their families.

3.6 Michelle describes her father as having the biggest heart. This is perhaps no more evident than in the love that Bruce came to hold for Mr Pascoe, treating him as if he was one of his own sons. Bruce was enormously proud of Mr Pascoe's talents and loved going to watch Mr Pascoe sing in his band.

3.7 After Michelle and Mr Pascoe lived in Queensland for a period of time, during which they would regularly travel to Sydney to spend time with Bruce, they moved back to Sydney to be closer to Bruce. There were many lifelong memories forged during this time: weekend gatherings with Michelle and her brother, and their respective families, where there was much joy and laughter; and Bruce simply enjoying the company of mates, having a few beers and placing a few bets at the pub. Bruce was particularly fond of a midi of Tooheys New.

3.8 Bruce was also known to maintain a routine that he followed every day like clockwork. He would wake, and then walk the same three kilometre route to get his paper. After returning home Bruce would tend to his garden, which was always kept in pristine condition. Bruce was known to be an

extremely hard worker, resilient and with a fighting spirit. He had a great sense of responsibility and held strongly to traditional values such as respect, honesty, selflessness, integrity and simply looking out for others less fortunate.

3.9 Bruce was also known to be strongly community-minded. He was well known in the Chester Hill community, having spent some 50 years there. Whilst going for a walk Bruce would often be stopped by members of the community who just wanted to say hello. Bruce was known to be generous with his time, always ready to help others in need and had a charitable spirit, regularly visiting a number of orphanages in Sydney to lift the spirits of the children there. Bruce was also known to regularly visit persons experiencing homelessness, providing food and basic living needs, and to simply check on their welfare.

3.10 Following his laryngectomy Bruce became an officer of the Laryngectomy Association of New South Wales, a title of which he was enormously proud. True to his selfless nature, Bruce gave up countless hours of his time to meet others who were about to experience the same life change that he had experienced, and to help them navigate through this uncertain course. Bruce always looked forward to attending monthly meetings of the Association and took Michelle to some of these meetings, to show off his pride and joy. As Michelle describes it, these meetings always made her feel blessed.

3.11 There is no doubt that Bruce lived a full, productive and happy life. Equally, there is no doubt that Bruce's generosity, selflessness, traditional values, and desire to place the needs of others above his own touched the lives of many others, leaving an indelible memory. To know that Bruce's life ended prematurely when he still had so much left to contribute and offer is truly devastating. In Michelle's own words, for someone like Bruce, who made the lives of others complete, mere words cannot describe the void left by his tragic and untimely death.

4. Bruce's medical history[1]

4.1 Bruce had previously been diagnosed with throat cancer (squamous cell carcinoma of the left pyriform fossa) in 1996 after a laryngoscopy revealed a tumour on the left aryepiglottic fold. He subsequently underwent total laryngectomy (removal of the larynx or voicebox), partial pharyngectomy[2] and tracheostomy[3].

4.2 As a result of his cancer surgery, Bruce had a permanent tracheostomy through which he breathed. As this opening in the throat is below the vocal cords, meaning that no air passes through them, Bruce spoke using an electronic device called an electrolarynx. This produces sound to create an artificial "voice".

4.3 In 2004 Bruce reported experiencing some dizzy spells. In early 2007 Bruce again experienced several syncopal[4] episodes. Neurological examinations found no evidence of postural hypotension or cardiac arrhythmia and overall it was felt that the episodes were probably syncopal rather than neurological or cardiac in nature.

4.4 Bruce was also known to have been a very heavy smoker for 50 years. He underwent regular colonoscopies and had surgery in 2004 and 2009 for non-malignant rectal polyps. Bruce also had a history of gout, oesophageal reflux and osteoarthritis. A CT scan of the chest in June 2012 for haemoptysis (coughing up blood) noted heavy coronary arterial calcification and appearances suggestive of previous asbestos exposure, but no lymphadenopathy[5] and no active pulmonary pathology to explain the haemoptysis.

4.5 By 2016 Bruce had been in remission from cancer for approximately 20 years, and was being reviewed for it every six months.

4.6 Sometime in early 2016 Bruce presented to his general practitioner (**GP**), Dr Donald Tan, complaining of left-sided chest pain. Dr Tan ordered a chest computed tomography (**CT**) scan which was performed on 8 March 2016 (**the March 2016 CT scan**). This was later reported on and identified "*mildly prominent paratracheal lymph nodes[6] are noted at the level of the thyroid gland measuring between 9.2mm and 13.5mm in short axis*", with "*no suspicious pulmonary nodule or mass lesion is present*".

5. The events of May 2016

18 May 2016

5.1 On the morning of 18 May 2016, Bruce drove his car to Granville train station, where he caught a train to Town Hall in order to attend a function. After arriving at Town Hall, Bruce felt unwell and experienced shortness of breath. He subsequently caught a train back to Granville and drove

[1] Part of this factual background has been drawn from the helpful submissions of Counsel Assisting.
[2] Surgical remove of the pharynx.
[3] A surgically created opening in the trachea (windpipe) to allow direct access to a breathing tube to provide an airway.
[4] Fainting or passing out, typically caused by a sudden, temporary drop in blood flow to the brain.
[5] A condition or disease affecting the lymph glands resulting in in lymph nodes that are abnormal in size, consistency or number.
[6] Lymph nodes along the sides of the trachea.

himself to Bankstown-Lidcombe Hospital (**BLH**), parking some distance away before walking to the Emergency Department (**ED**).

5.2 Upon presentation to the ED Bruce was assessed by a triage nurse at 2:37pm who noted that Bruce had complained of shortness of breath for the previous two months, and had left-sided chest pain. It was noted that Bruce had a history of laryngectomy and chronic objective airway disease (**COAD**). Bruce's respiratory rate was noted to be 26 breaths per minute, which was already within the Yellow Zone according to the Standard Adult General Observation Chart (**SAGO**). Bruce was assigned a Triage Code 2, meaning that he had an imminently life-threatening condition and required treatment within 10 minutes.

5.3 As will be explained in further detail below a respiratory rate above 25 (or below 10) is considered to be within the Yellow Zone whilst a respiratory rate above 30 or below 5 is considered to be within the Red Zone. These Zones are criteria used as a trigger to activate a clinical response which mobilises clinicians to assess, treat and review patients who are deteriorating, or are at risk of doing so.

5.4 By 2:50pm Bruce's respiratory rate was noted to be 27 and that he was still awaiting review by a medical officer. By 3:30pm Bruce's respiratory rate was noted to be 18. Bruce underwent a chest x-ray which was subsequently noted to be normal.

5.5 At 6:26pm Bruce was assessed in the ED by Senior Resident Medical Officer Dr Nasser. It was noted that Bruce was complaining of shortness of breath and that his respiratory rate was 27. On examination Dr Nasser felt that there was no added noise on breathing to suggest an airway obstruction and that Bruce was not using his accessory muscles of respiration (muscles that assist, but do not play a primary role, in breathing).

5.6 Dr Nasser subsequently discussed Bruce's presentation with ED Visiting Medical Officer, Dr Sharon Saw, and they saw Bruce together in person. On examination Dr Saw noted that Bruce did not have any wheeze or stridor[7], that he was not in respiratory distress and that a bronchodilator[8] was not indicated. Following this, Dr Nasser contacted Dr Philip Yeung, ear nose and throat (**ENT**) consultant at around 6:35pm. It was noted that Dr Yeung would review Bruce in the ED within one to two hours. In the meantime, Bruce was provided with normal saline nebulisation and suction.

5.7 At 6:38pm it was noted retrospectively that Bruce was still tachypnoeic[9], with a respiratory rate of 28, and that he had refused dinner. At 8:17pm it was noted that Bruce's respiratory rate was 27, that he was still tachypnoeic, and still waiting ENT review.

5.8 Dr Yeung eventually assessed Bruce in the ED at around 9:00pm, together with Dr Reema Hadi, ENT and plastics registrar. Bruce's symptoms were recorded as "*very slowly progressive breathing difficulty due to stenosis of the tracheostomy*", which was noted to be "*very tight*". Dr Yeung noted that Bruce had a recent chest CT scan, that he had been experiencing increasing shortness of

[7] An abnormal, high-pitched, wheezing sound associated with disrupted airflow or an obstructed airway.
[8] Medication that assists with breathing by relaxing the muscles in the lungs and widening the airways.
[9] A respiratory rate above normal levels (typically between 12 and 20 breaths per minute whilst resting).

breath over a period of weeks, and that he was now coughing up sputum[10]. Dr Yeung noted that Bruce's breathing was "*slightly laboured*" but that Bruce was still able to speak in sentences and conversed with Dr Yeung using the electrolarynx. Dr Yeung used a pair of Tilley's forceps, like a probe, to feel inside Bruce's trachea below the stoma noting that there was a lump which was quite firm and hard. Dr Yeung then obtained a fibre-optic endoscope[11], inserted it past the obstruction into the mid trachea, noting that once it passed the obstruction it normalised. The endoscope was 4 mm in diameter and Dr Yeung noted that it was "*snug*", meaning that Bruce effectively only had 4mm of airway which was considered to be uncommon, very tight and of concern.

5.9 Dr Yeung then removed (de-crusted) hardened, dried up mucus from the stoma noting that given Bruce's airway was quite tight, even removing 1mm of crust might assist. Dr Yeung attempted to inset a Shiley tracheostomy tube, using what he described as "*judicious pressure*", in order to secure Bruce's airway. However, as the tube encountered resistance Dr Yeung decided not to continue due to concerns that some trauma might be caused to Bruce's airway, leading to bleeding, which would be particularly problematic given Bruce's 4mm airway.

5.10 At that point, Dr Yeung considered that nothing further could be done as he did not know the nature of the lump. Dr Yeung considered the March 2016 CT scan (although he could not recall if the films or only the report was available to him) which mentioned a 3cm lymph node, which appeared to be in the same vicinity as where the lump was. As Dr Yeung noted that the lump was hard on palpation and appeared to be larger than the March 2016 CT scan indicated, he ordered an urgent CT scan for the next day to identify the nature and extent of the lump and whether it was compressing the trachea, and a positron emission tomography (**PET**)[12] scan to be performed.

5.11 Dr Yeung queried the possibility of acute renal failure and became concerned about possible recurrence of Bruce's throat cancer. The PET scan was to be carried out at Liverpool Hospital two days later on 20 May 2016, as it was not available at BLH. Bruce was admitted under Dr Yeung's care and hourly humidification via nebulised saline was ordered to assist with loosening up any encrustation or mucus which might block the airway.

5.12 At 10:00pm an unidentified member of the nursing staff approached Dr Nasser and requested a change to the calling criteria for Bruce's respiratory rate. In other words, such a change would increase the thresholds by which a clinical response would be triggered. Dr Nasser subsequently spoke to Dr Saw (who by this time had finished her shift and had left the hospital) about changing the calling criteria. However, Dr Saw declined to do so as she considered that BLH policy required that such a change be approved by the consultant under whose care a patient had been admitted. Dr Saw asked Dr Nasser to call Dr Yeung to seek such approval.

5.13 Dr Nasser subsequently spoke to Dr Yeung over the phone who approved the changing of the respiratory rate calling criteria. This had the effect of raising the threshold for the Yellow Zone from 25 to 30 breaths per minute (**the altered Yellow Zone**), and the threshold for the Red Zone from 30

[10] Thick mucus secreted by cells in the lower airways.
[11] A long, slender tubular instrument with a light and small camera used to visualise the inside of the body.
[12] A nuclear medicine imaging test involving injection of a small amount of radioactive liquid material (a tracer) which is used to show normal and abnormal metabolic activity, and diagnose a variety of conditions including cancer, heart disease and brain disorders.

to 35 breaths per minute (**the altered Red Zone**). Dr Yeung also required that Bruce be given hourly nebulised saline and that he be reviewed on the ward by an intensive care unit (**ICU**) registrar within one to two hours. Dr Yeung considered that ICU review was required to determine whether Bruce had developed respiratory fatigue by virtue of his tachypnoea which, in a patient with a narrower airway, necessitate the need for intubation and mechanical ventilation. As Dr Nasser, being a junior medical officer (**JMO**), was unable to alter the respiratory rate calling criteria on the observation chart, he subsequently sought approval from Dr Saw to do so. However, this was not noted on the observation chart until around at hour later at 11:10pm. In addition, it was noted that Bruce was next to be reviewed by the ICU registrar at 1:00am on 19 May 2016 with a determination to be made as to whether any further intervention was required or if the altered calling criteria was to remain.

19 May 2016

5.14 At 12:00am Bruce's respiratory rate was noted on the observation chart to be within the unaltered Yellow Zone, with no corresponding entry in that the progress notes. At 1:00am Bruce's respiratory rate was recorded (in retrospect) as 20 in the progress notes, but charted as about 33 on the observation chart, meaning that it was within the unaltered Red Zone. By this time Bruce had not been reviewed by the ICU registrar, meaning that the calling criteria reverted to their unaltered thresholds, and that a respiratory rate of 33 was within the unaltered Red Zone. At 2:30am Bruce's respiratory rate was charted to still be about 33, with no entry recorded in the progress notes.

5.15 Dr Katherine Cynthia, the ICU registrar, reviewed Bruce at around 3:00am. Dr Cynthia could not recall whether she was asked to review Bruce because of the altered calling criteria or so that he could be transferred to a ward. Similarly, Dr Cynthia could not recall why there was a delay in reviewing Bruce when it was expected that the ICU review was to be performed by 1:00am.

5.16 Dr Cynthia noted that Bruce appeared clinically well with no acute deterioration or airway compromise. Dr Cynthia also noted that Bruce appeared to get anxious with an increase in his respiratory rate and required suctioning by nursing staff. Dr Cynthia subsequently discussed Bruce with the ICU consultant (Dr Tummala), noting that Bruce was not for admission to the ICU if only for respiratory rate monitoring. Further, it was noted that the treating team was to decide if the calling criteria was to be altered on the ward.

5.17 At 2:45am a nurse in the ED (RN O'Rourke) recorded Bruce's respiratory rate in the progress notes (but not on the observation chart) as being 38 at the time of Dr Cynthia's review. It was also noted that Bruce was complaining of feeling blocked and having difficulty breathing at the tracheostomy site. At 3:40am, just after Dr Cynthia's review, RN O'Rourke recorded Bruce's respiratory rate to again be 38 in the progress notes (but not on the observation chart). It is unclear whether this recording is a repeat of the first observation at 2:45am, or a separate observation.

5.18 At 3:45am Bruce's respiratory rate was recorded as 32 on the observation chart with no corresponding entry in the progress notes.

5.19 At 5:00am the progress notes record Bruce's vital signs as being "*stable*" as per the altered calling criteria. A further progress note entry made retrospectively at 5:05am recorded that at 3:00am the

nebuliser had been withheld as Bruce was not tolerating it due to increased secretions. At 5:45am Bruce was transferred to Ward 2G, known at BLH as the respiratory ward.

5.20 At 9:00am Bruce was reviewed by Dr Hadi and Dr Mia Jung (intern shared between the plastics and ENT teams), who noted that Dr Yeung had requested an urgent PET scan. It appears that this review was focused upon preparations for the PET scan as there was discussion regarding the use of IV contrast for a CT scan.

5.21 It appears that only one observation was recorded on the observation chart (but not in the progress notes) during the morning shift, at 9:50am, when Bruce's respiratory rate was in the unaltered Yellow Zone.

5.22 At 12:30pm Bruce was reviewed by Dr Angelique Megevand (consultant respiratory physician) and Dr Akayla Mahendran (respiratory resident). It was noted that Bruce was struggling to expectorate and had an ongoing cough. The doctors also noted the altered calling criteria for respiratory rate, even though the criteria had expired some 11 and half hours earlier. On review the doctors considered it unlikely that Bruce had any respiratory tract infection and they discussed him with the "ENT team". However, there is no written record of any discussion with the ENT team at this time. A plan was formulated for Bruce to be discussed with the ENT registrar, and to be admitted under Dr Yeung.

5.23 At 1:50pm the progress notes record that a nurse in Ward 2G attended to Bruce's observations as charted, although no note was made of his respiratory rate. It was also recorded that Bruce was receiving regular nebulisations as charted, tolerating his diet well, and that his tracheostomy site was clean and intact, with no secretions noted during the day shift. It was also noted that Bruce received his hourly saline nebuliser at 8:00am, but refused to have it at 9:00am, 12:00pm, and 2:00pm.

5.24 Michelle and Mr Pascoe visited Bruce during the afternoon of 19 May 2016. The nature of this visit is discussed separately in further detail below.

5.25 At 4:18pm Bruce's respiratory rate was noted to be 22 on the observation chart (but not in the progress notes). At 7:00pm it was noted in the progress notes that Bruce's observations had been taken, but no note was made of his respiratory rate. At 7:40pm, it was noted that Bruce's respiratory rate was 26. No further observations were recorded until 2:00am on 20 May 2016.

20 May 2016

5.26 At 2:00am Bruce's respiratory rate was noted to be within the normal range, and between the flags. At 5:00am the progress notes record that Bruce had a settled night with no signs of respiratory distress. The progress notes record that Bruce's observations were "*within the flags*", but no entries were recorded on the observation chart.

5.27 At 5:30am Bruce was noted to be complaining of shortness of breath and received nebulised salbutamol, the first occasion that Bruce was recorded as requiring it during his admission. Bruce's

respiratory rate was not recorded, and it was noted that tracheostomy suction yielded no secretions.

5.28 At 6:00am Bruce's respiratory rate was recorded as 20-25 on the observation chart, with no corresponding entry in the progress notes. By 6:30am, it was noted that Bruce had coughed up some sputum, however his respiratory rate was not further recorded.

5.29 RN Amardam Naidu took over Bruce's care at 7:00am. At the time of handover, RN Naidu noted that Bruce was already dressed and lying on his bed comfortably in anticipation of being transferred to Liverpool Hospital for the PET scan. As RN Naidu was assisting other patients in the same room with breakfast and morning medications, Bruce indicated that he wanted to go to the toilet at 8:00am before his transfer to Liverpool Hospital. RN Naidu asked Enrolled Nurse (**EN**) Carmina Kelly to assist Bruce to an ensuite. Bruce mobilised to the ensuite, under the supervision of EN Kelly, and locked the door from the inside indicating that he was "*okay by himself in the toilet*".

5.30 As RN Naidu was dispensing medication to another patient she heard a sound from inside the ensuite. RN Naidu unlocked the ensuite door and found Bruce sitting on the floor near the toilet. RN Naidu asked Bruce what had happened, and he indicated that he had "*missed the toilet*" but that he had not hit his head and that he was fine. RN Naidu noted that Bruce had a skin tear on his right elbow and asked EN Kelly to stay with Bruce to assist him back on the toilet.

5.31 RN Naidu went to speak with Nursing Unit Manager (**NUM**) Nicole Morrison who was at the nursing station, and informed her that Bruce had missed the toilet but was unhurt. Meanwhile RN Kelly remained outside of the ensuite, knocking on the door every two to three minutes to check on Bruce. On each occasion, Bruce indicated that he was okay. However when Bruce exited the toilet he complained that he was short of breath and asked for oxygen. EN Kelly walked Bruce back to his bed and explained that, as a first-year nursing student, was not allowed to administer oxygen. However she indicated that she would seek the help of a RN, noting that Bruce at this time appeared to be "*a bit short of breath and a little distressed*".

5.32 RN Naidu heard EN Kelly calling for assistance a short time later and returned to Bruce's room with NUM Morrison and nursing educator Shalini Copland. By this time EN Kelly had already assisted Bruce back to the edge of the bed. It was noted that Bruce was having trouble breathing and asking for oxygen. RN Naidu applied a tracheostomy mask, and whilst putting the oxygen on Bruce fell backwards onto the bed and began to lose consciousness. Bruce became pale and unresponsive and a medical emergency team (**MET**) call was initiated as cardiopulmonary resuscitation (**CPR**) was commenced.

5.33 Dr Yung Tran, intensivist and anaesthetist, arrived at Bruce's room within two minutes in response to the MET call. Bruce was noted to be in cardiac arrest with monitoring equipment indicating no heartbeat, pulse or blood pressure but pulseless electrical activity of the heart. Dr Tran inserted a 5.5mm endotracheal tube without apparent difficulty in order to intubate Bruce quickly. CPR efforts continued for approximately 30 minutes without success. Tragically at 8:52pm resuscitation efforts were ceased and Bruce was pronounced life extinct.

6. Report of death

6.1 Bruce's death was reported to the Coroner on 20 May 2016. Consistent with the principles of Part 8.1 of the Act, which requires regard to be had to the dignity of a deceased person and for the least invasive procedure to be utilised in determining the cause and manner of a person's death, no postmortem investigative procedure was ordered.

6.2 Instead, following a recommendation made by the duty forensic pathologist, who had the opportunity to review relevant aspects of Bruce's medical history and medical records, a Coronial Certificate as to cause of death was issued on 27 May 2106. This Certificate listed the direct cause of Bruce's death as complications of tracheal stenosis, with (remote) laryngectomy and head and neck carcinoma (not otherwise specified) listed as antecedent causes of death.

7. What issues did the inquest examine?

7.1 Prior to the commencement of the inquest a list of issues was circulated amongst the sufficiently interested parties, identifying the scope of the inquest and the issues to be considered. That list identified the following issues:

(1) Was there any indication that Bruce experienced, or may have experienced, a later recurrence of his earlier carcinoma of the throat?

(2) What was the cause of the fall Bruce suffered on 20 May 2016? Did any pre-existing condition cause or contribute to that fall?

(3) What was the cause of the cardiac arrest Bruce suffered on 20 May 2016? Did any pre-existing condition cause or contribute to that cardiac arrest?

(4) What was the cause of Bruce's death?

(5) What was the manner of Bruce's death, in particular taking into consideration the following matters:

(a) his signs and symptoms at initial presentation at Bankstown-Lidcombe hospital;

(b) the recorded observations following admission;

(c) the response to the observations;

(d) the examinations undertaken;

(e) the investigations undertaken;

(f) the time taken to transfer Bruce from the emergency department to a ward;

(g) the choice of ward (not placing Bruce in a high dependency unit); and

(h) his pre-existing tracheostomy and stenosis;

(6) Should any recommendations be made pursuant to section 82 of the Act in relation to Bruce's death?

7.2 Each of the above issues is discussed in detail below. In order to assist with consideration of some of these issues, opinion was sought from the following experts as part of the coronial investigation. Each of the experts provided reports which were included in the brief of evidence, and each expert also gave evidence during the inquest:

(a) Associate Professor Richard Gallagher, consultant otolaryngologist, head and neck surgeon.

(b) Professor Suren Krishnan, consultant otolaryngologist, head and neck surgeon.

8. Relevant applicable policies and guidelines

8.1 The coronial investigation and inquest into Bruce's death had cause to consider a number of relevant guidelines and policies that were in effect within South Western Sydney Local Health District (**SWSLHD**) where BLH is located.

8.2 The SWSLHD *Clinical Emergency Response System (CERS) Policy Directive* (BNK_PD2-14_115) (**the CERS Policy Directive**) provides for a "*tiered response system that provides early recognition, intervention, timely management and appropriate treatment to the deteriorating and/or seriously ill individual within the hospital, 24 hours a day*". The CERS Policy Directive notes that BLH has implemented the NSW Health population/age specific standard observation chart which is designed to track trends in vital sign observations and trigger a CERS escalation response if clinically indicated. It does so by using colour-coded zones, as described below, to signify when observations are likely to represent deterioration and provide cues for triggering the appropriate level of escalation using the CERS tiered response process:

(a) Tier 1: Blue Zone response (newborn and paediatric population only) - increased vigilance and frequency of observations if clinically appropriate.

(b) Tier 2: Yellow Zone response (clinical review) - for urgent patient clinical review by the treating medical team.

(c) Tier 3: Red Zone response (rapid response/medical emergency team (MET) call) - for urgent patient resuscitation. The MET is composed of events clinicians who are trained in Advanced Life Support

8.3 Relevantly, if any one of the Yellow Zone criteria is present in an inpatient, as stated in the population/age specific standard observation chart – such as a Standard Adult General Observation Chart (**SAGO**) - then clinical staff are required to refer to the Nursing Unit Manager (or nurse in charge) to escalate to an urgent clinical review. The Yellow Zone escalation protocol provides that:

(a) Whether abnormal observations reflect deterioration in a patient, what is usual for the patient or if there are altered calling criteria, and whether there is an adverse trend in observations are all factors relevant to assessment of whether a clinical review is needed;

(b) Where a clinical review is required the treating team registrar and resident medical officer (or if after hours, a senior medical officer) is to be contacted;

(c) The clinical review must be attended within 30 minutes by the treating team registrar, or their delegate, and appropriate clinical care must be initiated;

(d) If a clinical review is not attended within the above timeframe, a Red Zone response must be initiated;

(e) Following the clinical review, the patient assessment, treatment, escalation process, management plan and outcome should be documented in the patient's clinical record, with any intervention is documented in the relevant standard observation chart.

8.4 The SAGO relevantly provides that for respiratory rate:

(a) the Yellow Zone triggers are if a measurement falls between 5 to 10 or 25 to 30 breaths per minute; and

(b) the Red Zone triggers are if a measurement falls below 5, or above 30, breaths per minute.

8.5 The CERS Policy Directive also provides that:

(a) alterations to calling criteria may only be modified "*according to an individual patient's needs*";

(b) the reason for any alteration and the new parameters must be clearly documented in the relevant standard observation chart;

(c) Alterations to calling criteria must be documented by the attending medical officer or delegate, with the medical officer responsible for this documentation to be at minimum a registrar or above, and following consultation/confirmation with the attending medical officer; and

(d) any orders altering calling criteria are valid for up to 72 hours and are to be reviewed earlier if clinically indicated.

8.6 The SWSLHD *Vital Signs Observation Guideline - Adult Patient* (BNK_PD2014_152) (**the Observations Guideline**) relevantly provides that monitoring vital sign observations is an essential component of caring for all of patients in the hospital to enable:

- Appropriate assessment of the patient's clinical condition
- Evaluation of treatment
- Detection of procedural complications
- Identification of early signs of clinical deterioration
- Prevention of a serious adverse event.

8.7 The aims and expected outcome of the Observations Guideline is to ensure:

(a) Clinicians have standardised approach to monitoring vital sign observations;

(b) Appropriate monitoring of physiological parameters to evaluate the patient's clinical condition and impact of treatment;

(c) Early detection and treatment of post procedural/surgical complications;

(d) Early detection and treatment of the deteriorating patient via the Bankstown-Lidcombe Hospital's CERS; and

(e) Prevention of a serious adverse event (cardiac arrest, unexpected death or an unplanned admission to a critical care area).

8.8 Further, the Observations Guideline relevantly provided that "*abnormal parameters must be acted upon and recorded appropriately*" and that "*[t]he CERS must be activated for patients with Yellow Zone/Clinical Review Call (YZ/CRC) and/or Red Zone/Medical Emergency Team (RZ/MET) calling criteria present as per CERS escalation protocol… unless the patient's calling criteria has been formally modified and documented in the clinical record*".

8.9 The Observations Guidelines also relevantly identify a number of "Vital Sign Frequency Considerations", including:

(a) Patients requiring more frequent vital sign monitoring include: new admissions from the ED (at six hourly intervals for the first 24 hours then as clinically indicated or as ordered by a medical officer); and

(b) Patients whose condition has changed or deteriorated suddenly and has not yet breached the Yellow and or Red Zone CERS calling criteria (at six hourly intervals until stabilised or as ordered by a medical officer).

8.10 The Observations Guidelines also provide that:

(a) "*All observations must be charted on the [Between the Flags] standard observation chart **at the time they are measured***" (original emphasis);

(b) "***All patients should be visually checked at least every hour overnight (including respiratory effort)***" (original emphasis);

(c) A CERS response must be activated if a patient's respiratory rate parameter is abnormal (that is, if the measurement falls within the Yellow Zone or Red Zone), except if the patient's calling criteria has been formally modified and documented in a BTF standard observation chart;

(d) "*Pulse oximetry measures peripherally oxygen saturation in the patient's blood. Altered peripheral oxygen saturation (SpO_2) is a **late sign of respiratory distress*** (original emphasis). *Initially the body attempts to compensate for hypoxia by increasing the rate and depth of respirations. A reduced SpO_2 is a late sign and may be reflected in a seriously compromised patient… If the patient's SpO_2 is a low, it often manifests in other clinical signs such as the patient appears short of breath, with increased respiratory rate and effort*".

9. Was there any indication that Bruce experienced, or may have experienced, a late recurrence of his earlier carcinoma of the throat?

9.1 Upon Bruce's admission to the Department of Forensic Medicine a routine postmortem CT scan (**the postmortem CT scan**) was performed on 22 May 2016. This was reported on by Dr James Raleigh, radiologist, who identified the following: "…*a lobulated soft tissue mass in the left lower neck (3.8 x 2.6 cm), deviating the trachea to the right above the thoracic inlet. The trachea is narrowed but not occluded. The mass is partially calcified and appears contiguous with the left lobe of the thyroid*". Dr Raleigh ultimately identified no metastatic disease, and concluded that the thoracic inlet mass deviating and narrowing the trachea "*probably arises from the left lobe of the thyroid*".

9.2 Dr Yeung's evidence as to this issue may be summarised as follows:

(a) He noted that the lymph nodes identified in the March 2016 CT scan measured up to 13.5mm (or 1.3cm) and that the lobulated soft tissue mass identified in the postmortem CT scan measured up to 3.8cm. Dr Yeung considered this to be a near tripling in size, and that such an increase would not have occurred if it was a long-standing thyroid nodule.

(b) Dr Yeung considered the size increased to be characteristic of a tumour, and considered that Bruce had a new primary cancer, rather than a recurrence of his previous laryngeal cancer.

(c) With the benefit of the postmortem CT scan, Dr Yeung therefore indicated that his original suspicion (as at May 2016) of a recurrence of the original laryngeal cancer was probably not correct.

(d) Ultimately, Dr Yeung considered the findings to represent "*a separate tumour process where [Bruce] has now developed a rapidly enlarging mass in the same location*" which was compromising his airway.

9.3 Associate Professor Gallagher's evidence as to this issue may be summarised as follows:

(a) The lymph nodes reported in the March 2016 CT scan were of borderline abnormal size with no sinister characteristics and were of no significance. Associate Professor Gallagher noted that the report made no mention of any mass or abnormality adjacent to the trachea, nor any mention of any abnormal mass suggestive of cancer.

(b) He explained that a nodule in the thyroid gland is extremely common in the community, being one of the most common lumps in the head and neck. Further, as the mass was noted in the postmortem CT scan to be partially calcified, Associate Professor Gallagher considered that it had been in this state for a long period of time.

(c) He considered the lobulated soft tissue mass to be referring to a long-standing benign nodule arising from the residual thyroid gland, and that this had nothing to do with causing a hard stenotic narrowing.

(d) Rather, he explained that 20 to 40% of patients with long-term laryngectomies develop stomal stenosis which is a hard mass of benign material related to the trachea and the tracheostoma. Associate Professor Gallagher considered this to be the most likely cause of a hard mass related to an area of stenosis.

(e) He considered that it was not possible for a patient with a squamous cell carcinoma of the larynx to develop a recurrence of the cancer 20 years after treatment. In this regard, he noted that Bruce's original laryngeal cancer was treated in 1996 and cured.

(f) He considered that the only way to determine whether the mass was malignant was to perform a fine needle biopsy and a non-contrast CT scan.

(g) He agreed that a PET scan would be an appropriate investigation if malignancy was reasonably thought to be a possibility. However considering that Bruce was 20 years post-treatment for cancer, it was inappropriate to consider performing a PET scan, which required Bruce to be transferred to another hospital, given that he was presenting with airway distress.

(h) Ultimately Associate Professor Gallagher considered that a PET scan would have made no difference to the clinical outcome, and considered the chasing of a possible malignancy in someone who presented with an acute respiratory complaint to be a "*distractor*" which compromised Bruce's care.

9.4 Professor Krishan's evidence as to this issue may be summarised as follows:

(a) He noted that late recurrence in patients with a previous laryngeal cancer had been documented.

(b) He acknowledged that the March 2016 CT scan showed no suggestion of any concern regarding a malignancy, but maintained that a new malignancy occurring in another head and neck subsite (such as the pyriform fossa) or in adjacent paratracheal lymph nodes or adjacent thyroid gland, was possible. In this regard, Professor Krishnan noted that Bruce's original cancer was a tumour of the pyriform fossa, which he explained has a "*notorious history*" of recurrence and poor outcomes.

(c) He agreed that there was no evidence to confirm either a recurring or new malignancy, but considered that it was reasonable for Dr Yeung, meeting a patient with a laryngectomy history, to be concerned about the possibility of either.

(d) He considered that if there was a reasonable concern about a malignancy then it would be reasonable to perform a PET scan followed by an ultrasound guided biopsy, to determine the nature of the lesion.

(e) Ultimately, Professor Krishnan considered that it was not unreasonable for Dr Yeung to be concerned about the possibility of recurrent disease and to investigate this. However,

Professor Krishnan qualified this opinion that it was reasonable only if the clinician was not anxious about acute airway obstruction.

9.5 Counsel for Dr Yeung submitted that it was not only reasonable for Dr Yeung to investigate the nature and extent of the lump that he identified on 18 May 2016, and its possible causes, but that it was, on any rational view, mandated. Further, it was submitted that Dr Yeung needed to initiate appropriate investigations in order to confirm or exclude his suspicion of a recurring or new malignancy. On behalf of the SWSLHD it was submitted that Dr Yeung's suspicion of a new malignancy was not speculative, and that reasonable minds may differ as to the degree of suspicion which may be held with respect to aspects of Bruce's presentation.

9.6 **Conclusions:** As at 18 May 2016, the available clinical evidence did not demonstrate that Bruce experienced, or may have experienced, a late recurrence of his earlier carcinoma of the throat. The expert evidence establishes that such a diagnosis could only have been confirmed with a fine needle biopsy. However, there is no dispute on the evidence that the lump identified by Dr Yeung on 18 May 2016 warranted further investigation.

9.7 In such circumstances, the question that arises is whether the investigations initiated by Dr Yeung were reasonable and appropriate in the circumstances. Associate Professor Gallagher acknowledged in evidence that colleagues of good standing may have differing, but equally correct, views as to the management of a patient in identical circumstances. So, although Associate Professor Gallagher considered that the lump felt by Dr Yeung was most likely a hard mass of benign fibrotic material related to stenotic tracheostoma in a long-term laryngectomy patient like Bruce, it is equally open for Professor Krishnan to express the view that it was reasonable for Dr Yeung to be concerned about the possibility of a recurring malignancy.

9.8 However, two matters should be noted. First, Dr Yeung resiled from his original suspicion held on 18 May 2016 that the lump he felt constituted a recurrence of Bruce's original malignancy. It was only with the benefit of the postmortem CT scan that Dr Yeung considered the lump to represent a potential new malignancy. This concession by Dr Yeung, together with the absence of any evidence to indicate that Dr Yeung considered the alternative explanation for the lump raised by Associate Professor Gallagher, suggest that whilst it was open to Dr Yeung to suspect the possibility of a recurring malignancy, other possibilities were not reasonably excluded. Second, the opinion expressed by Professor Krishnan above was qualified to the extent that suspicion regarding the possibility of a recurrent malignancy would only have been reasonable if there was no concern regarding the possibility of acute airway obstruction. It should be noted that although Dr Yeung made a single attempt to secure Bruce's airway, recognising the possibility of acute airway obstruction, no further similar attempt was made until two days later on 20 May 2016 when Bruce was, by that stage, in cardiac arrest. Therefore, the subsequent course of Bruce's management from 18 May 2016 tends to support the opinion expressed by Associate Professor Gallagher that consideration of the possibility of a recurrent (or new) malignancy distracted from managing other acute features of Bruce's presentation

10. What was the cause of the fall Bruce suffered on 20 May 2016, and did any pre-existing condition cause or contribute to that fall?

10.1 Perhaps unsurprisingly, the expert evidence at inquest was divided as to the cause of the fall suffered by Bruce on 20 May 2016.

10.2 Professor Gallagher gave evidence as to the following:

(a) Bruce's progressive shortness of breath, development of airway distress and confirmation of trachea stenosis on admission were all pre-existing conditions.

(b) He strongly suspected that Bruce fell from the toilet to the floor, and that this fall was likely related to acute airway distress and his diagnosed airway obstruction.

(c) He considered that Bruce may have had an acute sputum plug that, with a 4mm airway, could precipitate disorientation and a potential loss of consciousness. Further, Associate Professor Gallagher noted that as Bruce had significant chronic narrowing of his tracheostoma he would be retaining carbon dioxide, and that once this reached a sufficiently high level it could also cause disorientation and momentary loss of consciousness.

(d) He considered that nursing staff ought to have recognised that Bruce's airway was obstructed, that he was in respiratory distress, and that his condition had deteriorated, which ought to have in turn led to escalation for review by a medical officer.

10.3 Professor Krishnan gave evidence that:

(a) He noted that Bruce's respiratory rate earlier in the morning on 20 May 2016 was in the normal range, and that at the time of the fall Bruce was not exhibiting signs of respiratory distress.

(b) He did not consider Bruce to be confused given that he had got up that morning, dressed himself and was waiting to be transferred to Liverpool Hospital. Initially, Professor Krishnan believed that Bruce had also showered himself that morning, indicating that this behaviour also demonstrated that Bruce had sufficient reserve. When it was indicated that Bruce had not in fact showered that morning, Professor Krishnan indicated that this did not "*completely*" change his opinion, but that if Bruce had showered it would strengthen his view that Bruce was not experiencing acute airway impairment.

(c) He agreed with Associate Professor Gallagher that patients falling whilst in hospital is not an uncommon problem, and noted that Bruce in particular had a previous history of having difficulty with falls. In 2009 Bruce had experienced difficulties with transferring in and out of a bath and was referred to an occupational therapy unit at Bankstown hospital. Subsequently, arrangements were made for an appropriate railing to be placed in his bathroom at home. Professor Krishnan considered that the incident on the morning of 20 May 2016 may have been representative of this previous history.

10.4 Counsel for the SWSLHD submitted that a contemporaneous incident report completed at the time, together with primary evidence from attending nursing staff on the morning of 20 May 2016, is of assistance in resolving the cause of Bruce's fall. That is, both categories of evidence refer to the fact that Bruce had "*missed the toilet seat*" and that the fall occurred for reasons unrelated to his respiratory condition. It is submitted that this information is consistent with what Bruce told nursing staff at the time.

10.5 **Conclusions:** There is no dispute that the primary evidence established that when Bruce was found on the floor inside the bathroom, he reported that he had "*missed the toilet*" but that he was fine. This was repeated in the subsequent incident report. However, no substantive enquiry was made at the relevant time as to what factor(s) may have contributed to Bruce missing the toilet, other than an enquiry as to whether Bruce was experiencing dizziness, which he denied. Relevantly, RN Naidu specifically asked Bruce why he had fallen, but did not receive a direct response with Bruce only indicating that he was fine had had not sustained any head impact. Therefore, Bruce's report that he "*missed the toilet*" does not address any contributing factor(s) in relation to the fall itself.

10.6 Considered in isolation, Bruce's history of having previous difficulties with falls may suggest that the events on the morning of 20 May 2016 demonstrated further evidence of a similar fall. However, several matters should be noted. First, assessments conducted in the ED on 18 May 2016 and by nursing staff on 20 May 2016 both noted that Bruce was "*independent with toileting*". Second, the architecture of the hospital ensuite was different to the architecture of Bruce's bathroom at home, with fewer structural features that may have contributed to an accidental mechanical fall. Third, although Professor Krishnan, in his experience, considered that Bruce's actions on the morning of 20 May 2016 made the possibility of an impending airway obstruction less likely, the evidence did not exclude the possibility of such an obstruction occurring.

10.7 Therefore, given that Bruce had demonstrated the ability to independently mobilise prior to the incident and that his condition deteriorated suddenly after it (during which time Bruce requested that he be given oxygen), the available evidence, considered in context, suggests that an underlying contributing factor contributed to the fall. Having regard to Bruce's repeated complaints of shortness of breath during his admission, the elevation of his respiratory rate on several occasions and agreement in the expert evidence that Bruce had a critical airway, his fall in the bathroom on the morning of 20 May 2016 was most likely related to acute airway distress.

11. What was the manner of Bruce's death?

11.1 There are a number of matters relevant to consideration of the manner of Bruce's death which are individually discussed in more detail below.

Signs and symptoms at initial presentation

11.2 Professor Krishnan did not consider Bruce to present with acute respiratory distress when he arrived at BLH on the morning of 18 May 2016. He noted that Bruce was able to drive to the station, catch a return train to Town Hall, and then drive himself to hospital, which were not the usual ambulatory behaviours of a patient in acute respiratory distress. Rather, Professor Krishnan described patients exhibiting acute respiratory distress to be "*usually bed-bound*".

11.3 In reaching this conclusion, Professor Krishnan drew a distinction between patients with impairment of respiratory function and patients presenting with respiratory distress, and described a spectrum of presentations with patients presenting with "*embarrassment of the airway*" at one end of the spectrum, and patients presenting with acute airway obstruction at the other end of the spectrum. Professor Krishnan noted that patients may have impairment of respiratory function that is emergent, and that assessment is required to understand, firstly, the emergent airway before appropriate intervention is instituted, and, secondly, the timeframe within which such intervention is to occur. In particular, Professor Krishnan considered that Bruce presented with respiratory "*embarrassment*" but not acute respiratory distress, noting that Bruce's elevated respiratory rate represented tachypnoea, but not distress.

11.4 In contrast, Associate Professor Gallagher considered that Bruce's ambulatory behaviours on the morning of 18 May 2016 were not unusual as he had a history of airway difficulties and was accustomed to dealing with these difficulties. Associate Professor Gallagher went on to explain that patients such as Bruce will often appear stable until they decompensate, which can occur rapidly. Indeed, Associate Professor Gallagher considered that this is precisely what occurred on the morning of 18 May 2016, noting that Bruce was already in respiratory distress when first seen by Dr Nasser, given his elevated respiratory rate. Associate Professor Gallagher summarised his opinion simply in this way: "*…as far as I'm concerned, if someone has an increased respiratory rate and they say they can't breathe, they have respiratory distress*".

11.5 Further, Associate Professor Gallagher noted that at around 2:30pm and again at around 3:40pm Bruce was complaining of shortness of breath and, during the latter presentation, had bilateral decreased air entry. Associate Professor Gallagher explained that patients who have an end tracheostoma or tracheostomy are at high risk of airway obstruction. However, he considered that Bruce was not recognised as being at high risk due to having had a total laryngectomy and an end tracheostoma.

11.6 A significant proportion of the evidence at inquest, together with the written submissions prepared by Counsel Assisting and counsel for the various sufficiently interested parties, dealt with the concept of respiratory distress and whether Bruce presented with respiratory distress during the course of his admission. On behalf of the SWSLHD it was submitted that (a) Associate Professor Gallagher's overall opinion is affected by hindsight bias; (b) that in evidence Associate Professor

Gallagher appeared to concede that Bruce was not in actual respiratory distress but, rather, was presenting with a condition which may have been a "*precursor to impending respiratory distress*"; there is no sufficiently clear evidence upon which the opinion of Associate Professor Gallagher could be preferred to that of Professor Krishnan.

11.7 The following matters should be noted regarding the overall evidence:

(a) First, Associate Professor Gallagher was clear in expressing the view that Bruce's complaints of shortness of breath combined with his elevated respiratory rate in the unaltered Yellow Zone represented respiratory distress at his initial presentation. In support of this, Associate Professor Gallagher also expressed the view that an increased respiratory rate is "*one of the first signs of patients getting into trouble*", over other vital sign observations, and therefore it is the cardinal indicator of respiratory distress.

(b) Second, it is accepted that during the course of his admission, Bruce's respiratory rate fluctuated between the normal range and the altered and unaltered Yellow and Red Zones. Despite this, Professor Krishnan expressed the view that Bruce did not demonstrate respiratory distress at any stage. Professor Krishnan maintained this view even in relation to when Bruce's respiratory rate was measured at 38 (and above what would have been the altered Red Zone) in the early hours of the morning on 19 May 2016. Rather, Professor Krishnan considered that Bruce's increased respiratory rate represented tachypnoea, but not respiratory distress, and that tachypnoea is a "*multifaceted symptom*" with an associated need "*to be clear what the cause of the tachypnoea is before you assign importance to the tachypnoea in relation to outcome*".

It should be noted that Dr Tran agreed with the proposition that a respiratory rate of 38 represented respiratory distress which required urgent investigation, whilst at the same time acknowledging the need to consider the whole patient, or the entire clinical picture, in order to determine the next steps in a patient's management.

(c) Third, both Associate Professor Gallagher and Professor Krishnan agreed that on initial presentation Bruce had a critical 4mm airway, and that the combination of this presentation, together with his complaints of increasing shortness of breath and raised respiratory rate, meant that urgent review was required.

(d) Fourth, Dr Yeung on 18 May 2016 noted that Bruce presented with *"very slowly progressive breathing difficulty due to stenosis of the tracheostomy*" which was noted to be "*very tight*", and that if Bruce's respiratory rate remained elevated that he was at risk of developing respiratory fatigue which would then in turn require mechanical ventilation.

11.8 **Conclusions:** On 18 May 2016 Bruce presented with a recent history of increasing shortness of breath. It was noted that his respiratory rate was within the unaltered Yellow Zone and that he required ENT review. At that subsequent review it was identified that Bruce presented with a 4 mm critical airway and an unsuccessful attempt was made to secure his airway. This constellation of features indicates that Bruce was in respiratory distress at his initial presentation, or shortly afterwards.

11.9 Whilst Professor Krishnan considered that Bruce's raised respiratory rate was only one vital sign observations to take into account in the whole clinical picture, the evidence establishes that despite a respiratory review on 19 May 2016, no other review or investigation sufficiently identified the underlying cause of the raised respiratory rate. Instead, Bruce's clinical course was consistent with the diagnosis made by Dr Yeung on 18 May 2016, namely that of progressive breathing difficulty due to stenosis of his tracheostomy with repeated observations of a raised respiratory rate. This in turn lends support to the conclusion that Bruce presented with respiratory distress and that this presentation remained largely unchanged throughout the course of his admission.

Recorded observations following admission

11.10 Only one observation was recorded on the observation chart during the morning shift on 19 May 2016. This occurred at 9:50am (with no corresponding entry in the progress notes) when Bruce's respiratory rate was noted to be in the middle of the Yellow Zone. Associate Professor Gallagher considered that this observation, at least, should have prompted the ENT team to advise nursing staff that Bruce was in respiratory distress and in need of regular close observation due to the risk of airway obstruction.

11.11 Overnight on 19/20 May 2016 only two observations of respiratory rate were recorded: one at 2:00am on 20 May 2016 and the second at 6:00am. On both occasions, Bruce's respiratory rate was noted to be normal (within the 20 to 25 range).

11.12 Counsel for the SWSLHD submitted that, in the absence of any relevant direction from medical staff, nursing staff on the Ward could not reasonably be expected to carry out observations of Bruce beyond that required by the Observations Guideline. In this regard it was noted that nursing staff on the ward on 19 and 20 May 2016 noted that Bruce was comfortable throughout the day shift on 19 May 2016, had occasionally refused his hourly saline nebuliser but was otherwise travelling well clinically, was administered salbutamol on the morning of 20 May 2016 with good effect, and despite a fluctuating respiratory rate, had significant periods where his respiratory rate was noted to be within the normal range. Having regard to these features, it was submitted on the half of the SWSLHD that there was "*very substantial accordance with the formal requirements" of the Observations Guideline, and that "notwithstanding that the medical record does demonstrate the occasional omission, the overall impression is that nursing staff were in substantial compliance with relevant policies*".

11.13 The characterisation of substantial accordance or compliance with the provisions of the Observations Guidelines is both apt and telling. This is so because the degree of non-compliance was equally substantial and significant. That is, the Observations Guideline required:

(a) Vital sign observations being taken, at a minimum, at eight hourly intervals except where a patient falls within the provisions of *Vital Sign Frequency Considerations*;

(b) All observations being charted on a BTF standard observation chart at the time they are taken;

(c) All patients being visually checked on at least every hour overnight, including for respiratory effort;

(d) New admissions from the ED requiring more frequent vital sign monitoring as a general rule, typically at six hourly intervals for the first 24 hours, and then as clinically indicated or as ordered by a medical officer, in circumstances where it is noted that Dr Yeung requested hourly saline nebulisation and early ICU review;

(e) Where a patient is symptomatic, but has not yet breached the CERS calling criteria, their observations should be repeated in 30 minutes or as ordered by a medical officer until the patient is asymptomatic.

11.14 **Conclusions:** The available evidence establishes that although there was substantial compliance with relevant aspects of the Observations Guideline and CERS Policy Directive during the course of Bruce's admission, there were equally substantial aspects of non-compliance with both policy documents. These aspects of non-compliance were demonstrated largely in observations not being recorded in full as required, or not being recorded at all, resulting in potential missed opportunities to consider escalation for medical review.

11.15 Given the eventual clinical course it is difficult to not reach a conclusion that if the missed observations and medical reviews had occurred, they likely would have shown a progressive deterioration of Bruce's respiratory condition which resulted in his eventual respiratory failure. This is particularly so when regard is had to the initial diagnosis made by Dr Yeung upon Bruce's initial presentation that he was demonstrating "*very slowly progressive breathing difficulty due to stenosis of the tracheostomy"* which was noted to be *"very tight"*.

11.16 Even if the available evidence does not allow for such a conclusion to be reached (as was submitted on behalf of the SWSLHD), at the very least it largely detracts from the opinion expressed by Professor Krishnan regarding the reasonableness of Bruce's management and investigations taken in this regard. This is because that opinion was to a significant extent premised upon observations having been performed in accordance with the Observations Guideline, or as clinically indicated, with such observations demonstrating an absence of symptoms (such as confusion, restlessness, noisy breathing, use of accessory muscles of respiration) to demonstrate airway obstruction, or support the finding of tachypnoea as a change in clinical behaviour. However, in circumstances where the nature and extent of observations were either not documented as required, or not taken at all, the possible presence of such symptoms simply cannot be known.

Investigations and response to observations

11.17 Following his presentation to the ED at 2:37pm on 18 May 2016, Bruce was not seen by Dr Yeung until 9:00pm. It is unclear on the available evidence why it took more than six hours for Bruce to be reviewed by an ENT consultant. This meant that during this period, Bruce was not reviewed by any medical officer with knowledge of a tracheostoma or laryngectomy patient. In the intervening

period, Associate Professor Gallagher considered that there were opportunities to progress Bruce's management, namely:

(a) When Dr Saw reviewed Bruce at 3:35pm he had an elevated respiratory rate, was having difficulty breathing and was coughing up sputum. Associate Professor Gallagher noted that at this time Bruce was being managed by a JMO, and there appeared to be no sense of urgency in managing a patient with an end tracheostoma in respiratory distress.

(b) No baseline arterial blood gas (**ABG**) test was performed, which would have provided critical information regarding Bruce's true oxygenation and carbon dioxide levels.

(c) Bruce was not prescribed any nebulised bronchodilators or intravenous steroid.

(d) Associate Professor Gallagher considered that Bruce's airway needed to be secured and that this could have been achieved other than through intubation. For example, a tracheotomy tube or a cutdown endotracheal tube could have been inserted. It should be noted that Dr Tran agreed with either possibility in circumstances where a patient is in respiratory distress, and agreed that a patient informing a doctor of difficulty breathing and needing a tube inserted is a serious matter.

(e) It appears that Dr Hadi received a call from the ED to review Bruce and first saw him at around 8:00pm. However, it is unclear whether any steps were taken regarding Bruce's management at this time prior to the subsequent review by Dr Yeung an hour later.

(f) Bruce should have been reviewed by the admitting ENT team regularly throughout the course of the day on 18 May 2016, and particularly at the end of the day before the ENT team left the hospital. Further, Associate Professor Gallagher considered that the after-hours medical officers covering the ward ought to have been advised of Bruce's condition or asked to review him overnight, which would routinely occur for patients with respiratory distress and the possibility of airway obstruction.

11.18 The National Emergency Access Target (**NEAT**) (now known as the Emergency Treatment Performance Target) provides that there is an expectation that 81% of patients presenting to a public hospital ED will, within four hours, physically leave the ED for admission to hospital, be referred to another hospital for treatment or be discharged home. It is evident from the chronology of events on 18 May 2016 that the NEAT was not met. Further, both Associate Professor Gallagher and Professor Krishnan considered that by 6:45pm on 18 May 2016 Bruce should have been urgently reviewed given his respiratory rate of 28, tachypnoea and complaint of shortness of breath.

11.19 One significant feature of Dr Yeung's review of Bruce at 9:00pm on 18 May 2016 was that Dr Yeung noted that it was difficult to pass a 4mm flexible telescope through the stenosis. Both Professor Krishnan and associate Professor Gallagher agreed that the 4mm airway represented a narrowing of the trachea and that even in a tracheostomy patient it would be expected that a 4mm scope could be passed quite easily. Both Associate Professor Gallagher and Professor Krishnan considered that Dr Yeung's attempt to insert a 4mm scope as demonstrating critical airway

narrowing; indeed, Associate Professor Gallagher likened a 4mm airway to a patient breathing through a straw.

11.20 However, Associate Professor Gallagher and Professor Krishnan were divided as to the significance of the 4mm narrowing. Associate Professor Gallagher attributed significance to this clinical finding for two reasons: first, it could lead to a sputum plug causing obstruction of the airway, resulting in respiratory arrest followed by cardiac arrest; second, retention of carbon dioxide could result in loss of consciousness and ultimately cardiorespiratory arrest.

11.21 In contrast, Professor Krishnan considered that the mere finding of a 4mm airway alone did not necessarily mean that some action needed to be taken regarding Bruce's management within minutes, or even hours. Professor Krishnan explained the need to identify other potential evidence of airway obstruction (such as cyanosis, restlessness, confusion, decrease in oxygen saturation, use of accessory muscles of respiration) and then determine the time frame within which to institute steps in a patient's management. Professor Krishnan explained that as Bruce did not demonstrate any of these symptoms there was no immediate need to take any steps regarding his management. Indeed, Professor Krishnan considered that Bruce's airway may have been 4mm for a period of time and that if a gradual narrowing of the airway had occurred it may not have demonstrated any symptoms of respiratory distress. Professor Krishnan considered that a critical airway would likely manifest itself through significant limitation of ambulatory function, and that Bruce was ambulatory upon first presenting to the ED, and remained so afterwards.

11.22 **Conclusions:** Regardless of the differences in expert opinion regarding whether Bruce presented with respiratory distress on 18 May 2016, it is clear that his presentation warranted further investigation and management. Following Dr Yeung's review on the evening of 18 May 2016 the three most significant next steps in Bruce's management were provision of hourly nebulised saline, review by the ICU registrar and performance of a PET scan at Liverpool Hospital. Of these three steps, Bruce was unable to tolerate the nebulised saline at the intervals according to Dr Yeung's instructions but this was never raised with Dr Yeung, the review by Dr Cynthia did not occur within the timeframe contemplated by Dr Yeung and was effectively limited to whether Bruce should be transferred to the ICU for monitoring of his respiratory rate only, and the PET scan could not be immediately performed as such a service was not available at BLH. Importantly, as noted above, no further steps were taken following Dr Yeung's review to secure Bruce's airway or to investigate the possibility of carbon dioxide retention (discussed further below).

Respiratory review on 19 May 2016

11.23 Associate Professor Gallagher considered that Bruce was most likely aware that he had a stenosis of his tracheostoma and that at the time of his presentation on 18 May 2016, the stenosis had narrowed further and reached a critical point. Noting that Bruce had experienced increasing shortness of breath over a two week period which had suddenly worsened, and that he had been coughing up sputum, Associate Professor Gallagher considered that this would have been enough to precipitate airway distress. Associate Professor Gallagher therefore considered that Dr Megevand and Dr Mahendran did not recognise that Bruce was in significant respiratory distress (and quite possibly respiratory failure) due to narrowing of the tracheostoma and upper trachea,

and should have requested an ABG test. Although the respiratory team found no pathology in the lungs, they did not assess the upper trachea or tracheostoma and, whilst noting the modified calling criteria, did not question the reason for this.

11.24 There is one area of significant factual contention regarding the respiratory review by Dr Megevand and Dr Mahendran on 19 May 2016. This review occurred on the same day that Michelle and Mr Pascoe visited Bruce. On Mr Pascoe's account, during this visit Bruce expressed frustration with hospital staff who Bruce felt were not listening to him and treating him like a "panicking old man". As a result, Bruce requested that the batteries for his electrolarynx be retrieved from his car so that he could speak directly with hospital staff regarding his frustration. Michelle subsequently left the ward in order to retrieve the batteries.

11.25 During her absence, Mr Pascoe describes attending the ward to speak with Bruce. In his first statement in July 2019 Mr Pascoe was unable to identify this doctor, apart from the fact that the doctor was wearing a white coat. However in a second statement in January 2021 Mr Pascoe asserts that he was able to "*immediately"* recognise the doctor as Dr Mahendran and from a photo on her LinkedIn profile. Mr Pascoe emphatically gave evidence that this interaction was "*etched in [his] mind and nothing will ever convince [him] otherwise*". According to Mr Pascoe's account, there are three significant features of the interaction between Bruce and the doctor Mr Pascoe identified as Dr Mahendran which, according to Mr Pascoe, took between 20 to 30 minutes:

(a) Bruce said that he could not breathe and instructed the doctor, "*You need to put a tube in*". When the doctor advised Bruce this had already been attempted, Bruce informed the doctor that the tube was the wrong size and that the size should be the same as a tube that had previously been used when Bruce attended Auburn Hospital;

(b) Bruce repeatedly told the doctor, "*If you don't put a tube in, I'll die*";

(c) Bruce asked to be transferred to Auburn Hospital, and even indicated that he would make his own way thereby taking a taxi, but the doctor reassured Bruce that he was "in good hands here" and was "going to be okay", before ending the conversation abruptly after being beckoned away by a person described as the doctor's "supervisor".

11.26 Neither Dr Megevand or Dr Mahendran had any independent recollection of Bruce or the respiratory review on 19 May 2016. However, several features of their evidence contradicted the account given by Mr Pascoe:

(a) Dr Megevand gave evidence that in no circumstances would she permit a junior medical officer conduct a review on her behalf, although Dr Mahendran gave somewhat contradictory evidence that she might speak to a patient under the respiratory team at length, but not to an ENT patient;

(b) Dr Megevand gave evidence that she and Dr Mahendran would not have been apart for 20 to 30 minutes at any time on 19 May 2016 as they spent the majority of their time together whilst performing ward rounds;

(c) If Dr Megevand had been present she would not have waited for Dr Mahendran to have a 20 to 30 minute conversation with a patient;

(d) Both Dr Megevand and Dr Mahendran confirmed that they have never worn a white coat whilst at BLH and no other medical officer at BLH in 2016 wore a white coat as far as they were aware;

(e) The physical description of the doctor provided by Mr Pascoe did not match the actual physical appearance of Dr Mahendran.

11.27 In his evidence, Mr Pascoe appropriately conceded that apart from the white coat, he could not recall anything about what the doctor was wearing, and that the interaction with the doctor may have been shorter than the 20 to 30 minutes he originally attributed to it.

11.28 At the conclusion of Dr Mahendran's evidence there was a regrettable outburst made by Mr Pascoe from the public gallery. The outburst does not need to be repeated here, other than to note it had the effect of challenging the veracity of Dr Mahendran's evidence. Mr Pascoe apologised for his outburst the following day. Counsel for Dr Mahendran submitted that the outburst represented an attempt by Mr Pascoe to intimidate Dr Mahendran and that he therefore should not be accepted as a witness of truth.

11.29 Associate Professor Gallagher considered that the respiratory team should have been responsive to the concerns expressed by Bruce and Mr Pascoe, and attempted to explain to them why the medical staff did not share Bruce's expressed anxiety about his condition. Professor Krishnan described the experience of Bruce and Mr Pascoe as being a "*unique experience*" and that he would "*always defer to the patient's recollection*". Professor Krishnan similarly considered that the situation "*could have been handled better by the doctor concerned*", and that the medical staff should have explained what management steps were to be undertaken and for what purpose, and whether they held any concerns regarding Bruce's clinical condition.

11.30 **Conclusions:** It is not surprising that family members often have strong emotional reactions to evidence given during the course of an inquest. These reactions are not always positive and it is also not surprising that occasionally these reactions manifest in the form of an outburst from the witness box or the public gallery, in a not dissimilar fashion to the outburst made by Mr Pascoe. It is evident from the family statement given by Mr Pascoe at the conclusion of the evidence that Bruce was a father figure to him, and that he feels the loss of Bruce most deeply. Therefore whilst Mr Pascoe's outburst was improper, it is understandable given that the evidence did not coincide with Mr Pascoe's recollection of a deeply personal event. Notwithstanding the impropriety of the outburst, it is not a basis to conclude that the entirety of Mr Pascoe's evidence should therefore be considered as unreliable.

11.31 That said, it is difficult to resolve the factual conflict regarding Mr Pascoe's account of an interaction involving himself, Bruce and a doctor on 19 May 2016. The expert evidence, and the certainty expressed by Mr Pascoe himself regarding his recollection of events, establishes that it is most likely that Mr Pascoe correctly identified Dr Mahendran. However, it is apparent that this identification occurred almost 6 years after the event, and that the evidence of Dr Mahendran and Dr Megevand could not be tested in any meaningful way because they had no independent recollection of the event. It is therefore not possible to conclude whether Dr Mahendran or another unidentified medical officer was the doctor who interacted with Bruce and Mr Pascoe, or whether that interaction occurred in the precise terms described by Mr Pascoe.

11.32 The substantive conclusion that can be drawn from Mr Pascoe's account of this event is that he and Bruce, together with Michelle, were regrettably left without a clear understanding of the management of Bruce's symptoms, whether any further steps were to be undertaken and for what reason, and the reason why hospital staff may not have shared their concerns regarding Bruce's condition.

Other investigations

11.33 As noted above, one potential investigation considered during the course of the inquest was an ABG test. Dr Saw gave evidence that there was no basis for an ABG to be performed considering that Bruce's oxygen saturation was 99% on room air. Dr Saw (together with Dr Tran) referred to the alveolar gas equation (a method of assessing whether the lungs are properly transferring oxygen into the blood) and stated that it is "*impossible for someone breathing room air and saturating 99% to have an elevated carbon dioxide*". Further, Dr Saw considered that if Bruce had been experiencing carbon dioxide retention his bicarbonate level should have been high, and that was not.

11.34 Dr Yeung initially agreed in evidence that, in retrospect, an ABG should have been performed in order to determine Bruce's arterial carbon dioxide level, and that this would have provided more clarity in relation to whether Bruce was experiencing carbon dioxide retention. However, Dr Yeung qualified this by noting that:

(a) Bruce's oxygen saturation was around 98 to 99% on room air, without the need for supplemental oxygen at any point during his admission;

(b) Bruce did not appear to be confused or obtunded[13] on 19 May 2016 or on the morning of 20 May 2016 which would have suggested carbon dioxide retention;

(c) Bruce's bicarbonate level of 21 on 18 May 2016 was within the normal range, and consistent with pathology results from November 2014 and April 2015, which recorded bicarbonate levels of 23 and 21, respectively.

11.35 Associate Professor Gallagher placed less importance on bicarbonate levels and oxygen saturation, as he considered that a patient may have measurements within normal ranges for both but still

[13] A dulled or reduced level of consciousness where a person has slowed responses to stimulation.

have a raised arterial carbon dioxide level. Associate Professor Gallagher emphasised that Bruce had an elevated respiratory rate and that the only way to accurately measure the carbon dioxide level was to perform an ABG. Indeed, Associate Professor Gallagher described reliance on pulse oximetry in order to make decisions for patients with respiratory distress and airway obstruction as leading to "*a sense of security that isn't really there*". Further, associate Professor Gallagher considered that because Bruce did not have a normal airway, by virtue of his previous laryngectomy, he was inhaling air almost directly into his lungs, which may have partly explained why his pulse oximetry remained relatively high.

11.36 Professor Krishnan noted that throughout Bruce's admission his oxygen saturations were always between 95 to 100% on room air. Professor Krishnan considered that a patient with such observations is not in acute respiratory distress that is life-threatening. Professor Krishnan also noted that Bruce's bicarbonate level was consistent with previous pathology results from 2014 and 2015. On this basis, he considered that there was no objective evidence of Bruce having elevated carbon dioxide levels. Professor Krishnan considered that, from his reading of academic literature, that venous blood sampling of bicarbonate "*is as good or nearly as good an indicator*" of carbon dioxide measurement in an ABG.

11.37 However, Dr Tran considered there to be no correlation between Bruce's bicarbonate level of 21 taken on 18 May 2016, and the bicarbonate level of 10 taken at 8:54am on 20 May 2016. As Bruce was in severe cardiogenic shock from the cardiac arrest, Dr Tran considered that nothing could be read into the variance in bicarbonate levels. Professor Krishnan similarly agreed that the bicarbonate level, taken 20 minutes following Bruce's cardiac arrest, was taken too long after to "*make any sense of that or any blood results at that stage*".

11.38 On behalf of the SWSLHD it was submitted that having regard to the opinion expressed by Professor Krishnan, and consistent with the contemporaneous clinical opinion, the undertaking of an invasive ABG investigation was not clearly indicated.

11.39 **Conclusions:** Bruce's oxygen saturations and bicarbonate level prior to his cardiac arrest gave clinicians some reassurance that Bruce was not demonstrating a raised arterial carbon dioxide level, and that therefore an ABG test was not clinically indicated. However, it appears that sufficient consideration may not have been given to the opinion expressed by Associate Professor Gallagher that reliance upon oxygen saturation to determine the management of a patient with potential respiratory distress may give rise to a false sense of security. Indeed, the Observations Guideline emphasises that altered peripheral oxygen saturation is a late sign of respiratory distress. Therefore, the performance of an ABG test ought to have been considered in order to arrive at an accurate measure of Bruce's arterial carbon dioxide level. Dr Yeung acknowledged that such a test ought to have been considered, and performing such a test would have provided clarity in relation to whether Bruce was experiencing carbon dioxide retention.

Alteration of calling criteria

11.40 As to alteration of the respiratory rate calling criteria Associate Professor Gallagher opined that:

(a) There was no rationale for such an alteration in a patient like Bruce who had a total laryngectomy, who presented complaining of shortness of breath and had a raised respiratory rate; and

(b) It seems that the alteration was "*done to make life easier for the hospital staff*".

11.41 As to his second point, Associate Professor Gallagher explained in evidence that it was his view that the alteration was initiated by nursing staff so as to preclude the need (in accordance with the CERS Policy Directive) to give consideration to escalate for an urgent clinical review on each occasion that Bruce's respiratory rate was measured to be within the Yellow Zone.

11.42 It should be noted that Dr Yeung gave the following evidence regarding alteration of the calling criteria: "*Although [Bruce's] respiratory rate was elevated, his other parameters were reasonable, and given that if we did not move the zones we would have this continuous back and forth between nursing staff saying "Please, do something" and the medical staff on the ED might say "Well, there's not a lot of things we can do right now except keep nebulising him." So I felt it was reasonable to loosen the criterion a little bit, but with the proviso that the ICU team came to see him after a couple of , couple of hours to see if he's developing any respiratory fatigue*".

11.43 In contrast, Professor Krishnan did not consider the alteration of the calling criteria to be unreasonable for the following reasons:

(a) Consideration needed to be given to the entire clinical picture, which demonstrated a patient with a narrowing airway, although the nature and duration of the narrowing was uncertain and being evaluated;

(b) Although one vital sign observation (respiratory rate) was abnormal, the other observations (most relevantly, oxygen saturation) did not support any abnormality;

(c) Single observations at a point in time are insufficient with a pattern or trend being more significant;

(d) There were no other documented features (such as decrease in oxygen saturations, evidence of cyanosis and carbon dioxide retention, increasing drowsiness, increasing restlessness, noisy breathing, wanting to improve posture) to support the increasing tachypnoea as a change in clinical behaviour.

11.44 One significant point during Bruce's admission was at around 2:45am on 19 May 2016. At the time, Bruce was being reviewed by Dr Cynthia and his respiratory rate was measured at 38. Professor Gallagher considered it "*alarming*" that this measurement was not acted upon, and considered that it should have warranted the following steps in Bruce's management: review by a member of the ICU team (although it is noted that Dr Cynthia was reviewing Bruce at the time the

measurement was taken), transferring Bruce to the ICU or high dependency unit, and notification to Dr Yeung of a concern due to Bruce's elevated respiratory rate. Professor Gallagher opined that at the least, this measurement would have warranted Bruce being reviewed again within one to 2 hours.

11.45 Professor Krishnan agreed that this measurement "*should have attracted the attention of the ICU staff*" and that Bruce should have been reviewed more frequently. However, Professor Krishnan emphasised that it is important to not consider an individual measurement in isolation, but rather to consider any trend over a 24 to 36 hour period. To this extent, Professor Krishnan noted that during this period Bruce's respiratory rate fluctuated between a high of 38 but also returned to normal levels between 20 to 25, leading him to conclude that there was not "*a continuing linear acceleration of breathing which would be a significant distressing record of [Bruce's] progress*".

11.46 In contrast, Associate Professor Gallagher attributed a different significance to the fluctuating nature of Bruce's respiratory rate. He considered that the fluctuations to be expected with a patient complaining of shortness of breath. Associate Professor Gallagher considered that a decrease in respiratory rate did not indicate that Bruce was getting better, only that his measurement was within the normal zone at a particular point in time. Overall, Associate Professor Gallagher considered that during most of Bruce's admission he had a raised respiratory rate and complained of being short of breath.

11.47 In a retrospective progress note entry at 3:30am on 19 May 2016 Dr Cynthia recorded that Bruce was "clinically well" with "no acute deterioration/airway compromise". It was also noted that "get anxious with ↑RR + requiring suctioning by nursing staff". Dr Cynthia only had a vague recollection of events and no recollection that Bruce had a rest entry rate of 38 at the time of review, but accepted that she would have been aware of this (as it was recorded in the nursing entry at 2:45am) at the time of review. Dr Cynthia agreed that a respiratory rate of 38 was within the altered Red Zone calling criteria, but said that she had no expectation that nursing staff would call her back to review Bruce as he was subject to continuous monitoring in the emergency Department at the time. Dr Cynthia went on to explain that when Bruce's respiratory rate was noted to be 38 again at 3:40am that a senior medical officer from the ENT team should have been contacted.

11.48 Initially, Dr Cynthia explained that her entry of Bruce "get[ting] anxious" indicated that usually when [patients] get anxious they tend to breathe faster". However, later in her evidence Dr Cynthia acknowledged that it was possible that Bruce's anxiety was because of his increased respiratory rate. It should be noted that following her review, Dr Cynthia discussed its outcome with the ICU consultant (Dr Tummala). However, this consultation was not documented and in evidence Dr Cynthia had no independent recollection of it.

11.49 One other significant event occurred in the early hours of the morning on 20 May 2016. At 5:00am a nursing progress note entry recorded that Bruce showed "no signs of respiratory distress". However, 30 minutes later at 5:30am the nursing note entry recorded that Bruce was complaining of shortness of breath, prompting him to be started on nebulised salbutamol. Associate Professor Gallagher considered that this indicated Bruce was in respiratory distress, warranting review by a medical officer.

11.50 Professor Krishnan attributed less significance to this event, noting that the administration of nebulised salbutamol was an appropriate response to Bruce's symptoms and an attempt to make him more comfortable. However, Professor Krishnan noted that although Bruce was complaining of shortness of breath his respiratory rate (recorded at 6:00am) was normal and described this as "*conflicting evidence*". Overall, Professor Krishnan considered that only focusing on a single event, and not the overall trend of Bruce's respiratory rate being within the normal range, as being "misleading", and did not consider this to represent Bruce being in respiratory distress at the time.

11.51 **Conclusions:** There appears to be no dispute that the alteration of the calling criteria was initiated by a member of the nursing staff. Associate Professor Gallagher's interpretation of the basis for the request is consistent with the evidence given by Dr Yeung. To this extent, Dr Yeung's approval for the calling criteria being altered was conditional upon ICU review occurring within a specified timeframe. As this review did not occur, for reasons that are not clear, it cannot be said that alteration of the calling criteria was entirely reasonable. Further, the delay in ICU review left nursing staff in some confusion as to whether the calling criteria had reverted to their unaltered threshold. In addition, the expert evidence was in agreement that when Bruce's respiratory rate reached 38 (and into even the unaltered Red Zone) it should have resulted in ICU review and more frequent observations, neither of which occurred.

Choice of ward and whether Bruce ought to have been transferred to a high dependency unit

11.52 Professor Krishnan initially appeared to express some hesitancy about whether Bruce needed to be nursed in a high dependency area, describing that he did not consider it to be "*completely inappropriate*" that Bruce be transferred to a respiratory ward. This is on the basis that Professor Krishnan considered that the monitoring of Bruce's respiratory rate and respiration (as discussed between Dr Cynthia, Dr Yeung and Dr Saw) could be managed in a respiratory unit, and that Bruce did not require other forms of invasive monitoring. However, ultimately Professor Krishnan considered that it would have been safe for Bruce to be kept in the respiratory ward given that his overall presentation showed normal oxygen saturations, a normal bicarbonate level, no evidence of elevated carbon dioxide levels, and no evidence of acute impending airway distress.

11.53 Associate Professor Gallagher considered that Bruce needed to be kept in the emergency department with one-to-one nursing until he could be nursed in a high dependency environment. He explained that a high dependency environment did not necessarily mean that Bruce required other forms of invasive monitoring. Instead, given Bruce's elevated respiratory rate, complaints of shortness of breath and tenuous airway which had not been secured if he experienced a cardiorespiratory event there would be difficulty with intubation. In such a scenario, Associate Professor Gallagher noted that if Bruce's airway could not be secured this would compromise any resuscitation efforts, and would have required immediate insertion of an appropriate tracheostomy or endotracheal tube to secure his airway. Ultimately, Associate Professor Gallagher considered that Bruce should have been transferred to Liverpool Hospital (as the tertiary level referral hospital from BLH), with the expectation that he would have been reviewed by a registrar with specialisation in otolaryngology, head and neck surgery. This would likely have resulted in a discussion and review by a surgeon experienced in the management of head and neck cancer patients.

11.54 It was submitted on behalf of the SWSLHD that this issue cannot be explored to its ultimate conclusion as there is no evidence as to whether any bed was in fact available in either the high dependency unit or the ICU. It was further submitted that there is no evidence as to the likely course of events if such a transfer had occurred, and as to how nursing in a high dependency environment would have been relevantly "*better*" given Bruce's presentation.

11.55 **Conclusions:** As noted above, transfer to a high dependency environment would have allowed for less possibility of difficulties associated with intubation, which would have been required if Bruce experienced a cardiorespiratory event and needed his airway secured. The absence of any evidence regarding bed availability is due to the absence of consideration being given to whether such a transfer ought to have occurred. In any event, given the somewhat equivocal opinion expressed by Professor Krishnan, it appears that some consideration ought to have been given to such a transfer. It would have provided an additional level of risk mitigation against the possibility of complications associated with intubation, particularly given Bruce's complex airway, if such a need arose.

12. What was the cause of Bruce's death?

12.1 Associate Professor Gallagher noted that Bruce presented with a narrowed airway that was not secured during his admission. On this basis he considered that Bruce's fluctuating and elevated respiratory rate was related to mucus causing obstruction of his very tight, stenotic tracheostomy. Associate Professor Gallagher considered that the most likely cause of death was either:

(a) A sputum plug which caused obstruction and cardiorespiratory arrest; or

(b) Carbon dioxide levels reaching a critical point, causing loss of consciousness and hypoxaemia, resulting in cardiac arrest.

12.2 Associate Professor Gallagher therefore concluded that Bruce's cardiac arrest was directly related to his critical airway obstruction and poor management. Associate Professor Gallagher acknowledged that Bruce may have had a myocardial infarction at the time of his fall in the bathroom, but considered that this might have been secondary to carbon dioxide retention and airway distress.

12.3 In evidence, Professor Krishnan noted that there was evidence of coronary artery calcification "*and evidence of obstruction*", emphysema and renal failure. It should be noted that the postmortem CT scan identified calcification, but not occlusion, of the coronary arteries. In any event, Professor Krishnan noted that these various pathologies highlighted Bruce as a patient with "*a complex range of issues*". Whilst Professor Krishnan expressed doubt that one of these pathologies in isolation was causative of death, he considered that one or more in combination could have resulted in the acute event experienced by Bruce. Ultimately, Professor Krishnan did not consider that Bruce had an acute impending airway obstruction on the morning of 20 May 2016 given that he was able to mobilise and dress independently, and there was no evidence of cyanosis or confusion at the time of the event.

12.4 Counsel for Dr Yeung submitted that there is insufficient evidence to determine whether Bruce's "cardiac disease was the trigger for his death and exacerbated his breathing difficulties or whether the breathing difficulties were the trigger for his arrest". Counsel for the SWSLHD submitted that associate Professor Gallagher's opinion as to the cause of Bruce's death is equivocal as he appeared to acknowledge in evidence the inability to conclude one possible cause of death as being more likely than another.

12.5 **Conclusions:** It is acknowledged that no postmortem examination, other than the postmortem CT scan, was conducted. This makes the determination of the cause of Bruce's death with any precision a difficult exercise, especially given the differences of opinion expressed in the expert evidence. However, several matters should be noted. First, despite Bruce's cardiac history being available on his medical records, no cardiac consult or review was requested during his admission. Further, no investigation identified a cardiac cause for Bruce's respiratory presentation. Second, Professor Krishnan's description of a "*widow maker*" in reference to the three major coronary arteries was premised upon the arteries being occluded. However, the postmortem CT scan identified calcification, but not occlusion, of the coronary arteries. Third, although Associate Professor Gallagher appropriately acknowledged that Bruce's cause of death might be entirely cardiac in nature, or that his airway distress might have been exacerbated by a cardiac event, he opined that the most likely cause of death was related to mucus causing obstruction of Bruce's already tight stenotic tracheostomy (which in turn most likely caused a sputum plug or carbon dioxide retention leading to cardiorespiratory failure).

12.6 Having regard to the matters set out above it is more probable than not that the cause of Bruce's death was cardiorespiratory failure due to complications of tracheal stenosis.

13. Should any recommendations be made in relation to Bruce's death?

13.1 The inquest received evidence from Peter Rophail, General Manger BLH, as to remedial action that has been taken since May 2016 arising from the circumstances of Bruce's admission. This remedial action has resulted in the following improvements:

(a) Implementation of a REACH policy. This is an acronym for Recognise, Engage, Act, Call, Help is on its way, developed by the Clinical Excellence Commission in collaboration with Local Health Districts and consumers. REACH encourages patients, family members and carers to engage with nursing and medical staff regarding any concerns that have not been addressed, which can then be escalated by requesting a clinical review, followed by an independent review or rapid/emergency response if such concerns remain. Mr Rophail confirmed that it is now mandatory to provide REACH information to patients and family members upon admission, to allow those who are closest to, and know, a patient best to alert staff to patient deterioration and escalate care in a team effort.

(b) The previous paper-based medical record has largely been replaced by an electronic medical record (**eMR**) which has resulted in the following changes to vital sign observations (i) altered calling criteria are limited to 24 hours; (ii) each scheduled vital signs observation field is to be

completed with no gaps in the record; (iii) there are automatic reminders when calling criteria are changed and when they expire; (iv) users are prompted to undertake a review of the altered calling criteria within specified time.

(c) When a patient is identified for transfer to a ward, the nurse unit manager or nurse in charge is to ensure that observations have been attended to within 30 minutes at that transfer (as opposed to 60 minutes as at May 2016).

(d) Education and feedback have been provided to staff regarding specific aspects of Bruce's admission, namely recognition of the altered respiratory rate calling criteria upon Bruce's transfer to Ward 2G, and steps to address falls risks arising from the events of 20 May 2016.

(e) Review of the Observations Guideline and CERS Policy Directive with changes made to each respective document the subject of education to clinicians, together with monthly reports identifying non-compliance with the CERS Policy Directive.

13.2 Having regard to each of the appropriate changes made by BLH since May 2016 it is not necessary or desirable to make any recommendation pursuant to section 82 of the Act.

14. Findings pursuant to section 81 of the *Coroners Act 2009*

14.1 Before turning to the findings that I am required to make, I would like to acknowledge, and express my gratitude to Ms Eva Elbourne, Counsel Assisting, and her instructing solicitor, Mr Paul Armstrong of the NSW Crown Solicitor's Office. The Assisting Team has provided outstanding assistance during the course of the coronial investigation and throughout the course of the inquest. I am also extremely grateful for the sensitivity and empathy that they have shown throughout the course of this distressing matter.

14.2 I also thank Senior Constable Cody-Lee Brennan from Bankstown Police Area Command for compiling the initial brief of evidence.

14.3 The findings I make under section 81(1) of the Act are:

Identity

The person who died was Bruce Hodges.

Date of death

Bruce died on 20 May 2016.

Place of death

Bruce died at Bankstown-Lidcombe Hospital, Bankstown NSW 2200.

Cause of death

The cause of Bruce's death was cardiorespiratory failure due to complications of tracheal stenosis.

Manner of death

Bruce's tracheal stenosis was associated with pre-existing tracheostomy (for 20 years) related to a diagnosis of squamous cell carcinoma of the left pyriform fossa resulting in total laryngectomy Following presentation to hospital on 18 May 2016, there was progressive deterioration of Bruce's respiratory condition, from respiratory distress leading to respiratory failure and subsequent cardiac arrest.

15. Epilogue

15.1 On behalf of the Coroner's Court of New South Wales, I offer my deepest sympathies, and most sincere and respectful condolences, to Michelle and Wayne Pascoe; Bruce's other family members and his many friends and colleagues for their most painful and devastating loss.

15.2 It is perhaps fitting to conclude with the lyrics, written by Mr Pascoe and Bruce together, for a song about Bruce which describes him, in Mr Pascoe's words, "*to a tee*":

> *He'll tie it up with wire to keep it on the road.*
> *He's always there to lend a hand to lighten up your load.*
> *You know he'll always a mate, there's nothing he won't do.*
> *He's a fair dinkum bloke and I can't say enough about Blue.*
> *He'll tip his hat and say G'day to strangers walking by.*
> *He'll pop into the milk bar and he'll grab himself a pie.*
> *Shout one to the homeless bloke that comes from Timbuktu.*
> *You'll never go hungry when you've got a mate around you like Blue.*
> *Blue's me mate. Shut the gate. Jump back in the ute, let's go chasing kangaroo.*
> *She'll be right, we've got toast and Vegemite.*
> *He's a fair dinkum bloke and I can't say enough about Blue*
> *Now the sad truth is, I must admit, but Blue's a dying breed.*
> *I hate to see him disappear, he's what this country needs.*
> *And if you don't want to see him go, there's one thing you can do.*
> *Every single day, try and be a little more like Blue.*
> *'Cause you'll never go hungry when you've got a mate around you like Blue.*
> *He's a fair dinkum bloke and I want to just like Blue*.

15.3 I close this inquest.

Magistrate Derek Lee
Deputy State Coroner
12 October 2021
Coroner's Court of New South Wales