

SUPREME COURT OF QUEENSLAND

CITATION: *Masson v State of Queensland* [2019] QCA 80

PARTIES: **THE ESTATE OF THE LATE JENNIFER LEANNE MASSON**
(appellant)
v
STATE OF QUEENSLAND
(respondent)

FILE NO/S: Appeal No 8805 of 2018
SC No 306 of 2005

DIVISION: Court of Appeal

PROCEEDING: Miscellaneous Application – Civil

ORIGINATING COURT: Supreme Court at Cairns – [2018] QSC 162 (Henry J)

DELIVERED ON: 10 May 2019

DELIVERED AT: Brisbane

HEARING DATE: 13 November 2018

JUDGES: Fraser and McMurdo JJA and Boddice J

ORDERS: **1. Appeal allowed.**
2. Orders made on 23 July 2018 and 8 August 2018 set aside.
3. That within 28 days of this judgment the parties are to file and exchange written submissions, not to exceed eight pages, as to the amount for which the appellant should be given judgment and as to the costs of the appeal and in the trial division.

CATCHWORDS: TORTS – NEGLIGENCE – ESSENTIALS OF ACTION FOR NEGLIGENCE – STANDARD OF CARE – GENERALLY – where the appellant suffered a severe asthma attack – where the appellant was unconscious, had a low respiratory rate but had high blood pressure and a high pulse rate – where an ambulance officer treated the appellant initially by the intravenous administration of the drug salbutamol and then 20 minutes later by the intravenous administration of the drug adrenaline – where the appellant suffered hypoxic brain damage and later died as a result of the asthma attack – where the ambulance officer’s manual instructed the officer to “consider adrenaline”, not salbutamol – where the ambulance officer administered salbutamol in amounts in excess of the manual’s guidance – whether the ambulance officer considered the administration of adrenaline

– whether the ambulance officer departed from the manual – whether there is a responsible body of medical opinion in favour of the administration of salbutamol over adrenaline where a person in imminent arrest has high blood pressure and a high heart rate – whether it is consistent with the exercise of reasonable care and skill for an ambulance officer to depart from the guidance of their manual

Ambulance Service of New South Wales v Worley [2006] NSWCA 102, cited

COUNSEL: D Campbell SC, with A Katsikalis, for the appellant
P V Ambrose QC, with C Fitzpatrick and S Noble, for the respondent

SOLICITORS: RMB Lawyers for the appellant
Crown Law for the respondent

- [1] **FRASER JA:** I agree with the reasons for judgment of McMurdo JA and the orders proposed by his Honour.
- [2] **McMURDO JA:** In 2002, Jennifer Masson suffered a severe asthma attack at a friend’s house in Cairns. An ambulance was called which arrived a few minutes later. Ambulance officers treated her immediately, including by the intravenous administration of the drug salbutamol. About 20 minutes later, when she was being transported to a hospital, the officers administered the drug adrenaline. She was soon at the hospital where she received further doses of adrenaline. Asthma is a disease characterised by inflammation and constriction of the bronchial passages, causing difficulty in breathing which, in a case of this severity, results in a life threatening deprivation of oxygen. Salbutamol and adrenaline are drugs which facilitate breathing by dilating the bronchial passages.
- [3] When the ambulance officers arrived at the scene, Ms Masson had already stopped breathing. Tragically, by the time she arrived at the hospital she had suffered irreversible brain damage by being deprived of oxygen.
- [4] Ms Masson lived in a vegetative state until 2016, all the time receiving around the clock care. By this proceeding, she claimed damages against the State of Queensland as the provider of the services of the Queensland Ambulance Service (“QAS”). After her death, the claim survived in the hands of her estate.¹
- [5] There were several allegations of negligence, each of which was rejected by the trial judge.² Only two of them are pressed in this appeal. The first is that the ambulance officers ought to have administered adrenaline immediately, or at least within a couple of minutes, rather than doing so only 20 minutes later. The trial judge found that had this occurred, her brain damage would have been avoided.³ But he held that, in the circumstances of this patient, the officers had not been negligent in delaying the application of adrenaline as they did.⁴

¹ Pursuant to *Succession Act* 1981 (Qld), s 66.

² *Masson v State of Queensland* [2018] QSC 162 (“Reasons”).

³ Reasons [168].

⁴ Reasons [155].

- [6] The second allegation was that the officers, although not themselves negligent, were inadequately trained and instructed by the QAS to deal with an emergency such as this one, with the consequence they did not administer adrenaline earlier. That allegation was rejected for essentially the same reason, namely that in a case of this kind, it was a reasonable response to administer salbutamol as the officers did, so that there was no negligence in not instructing officers to do otherwise.⁵
- [7] The quantum of damages was agreed at \$3,000,000. The only issues in the nine day trial were ones of liability. In this appeal, what is in question is the correctness of the trial judge's rejections of those two allegations of negligence.

The treatment of Ms Masson

- [8] The facts of Ms Masson's condition and the treatment which she received from the QAS are uncontroversial. She was a chronic asthmatic, with a life-long history of brittle, severe asthma. She had been admitted to hospital for asthma many times. She carried adrenaline, in the form of an EpiPen, to be injected in the case of a sudden, severe asthma attack.⁶ When she first suffered this attack, she used her usual puffer medication, which administered salbutamol (under the brand name Ventolin), but without success. She quickly deteriorated and, after asking her friends to drive her to hospital, collapsed and stopped breathing. Her friends provided CPR and called for an ambulance. The records of the QAS record that the call was received at 22:51 hours and officers arrived at the scene at about 22:58.
- [9] Again according to the QAS records, on arrival the officers were informed that Ms Masson had a history of severe asthma, had suffered an asthma attack, had used her puffer to no effect, and had collapsed into a respiratory arrest. The principal ambulance officer who was present was Mr Clinton Peters, who observed that Ms Masson was centrally cyanosed (meaning that her face was blue), her respiratory rate was only two breaths per minute, and she had a Glasgow Coma Scale ("GCS") of six, meaning that she was effectively unconscious. Her heartbeat was very high at 150 beats per minute, as was her blood pressure at 155/100. A heartbeat which is higher than 100 beats per minute constitutes what is called tachycardia.
- [10] The ambulance officers responded immediately as follows. They ventilated the patient and attempted to oxygenate her by the application of a mask. But she proved difficult to oxygenate.⁷ At the same time, Mr Peters applied an intravenous cannula into her elbow pit to administer intravenous drugs and, at 22:59, by that means he began administering dosages of salbutamol. Eight portions, totalling two milligrams of salbutamol, were administered from then until 23:20. As the judge recorded, this was twice the maximum dose recommended by the QAS in its clinical practice manual (the "CPM"), which the QAS provided to its officers for use in the field.⁸
- [11] The officers contemporaneously recorded her condition during the 20 minutes or so from the time of their arrival. I have mentioned her pulse rate, respiratory rate,

⁵ Reasons [185].

⁶ As noted in a report of Associate Professor Raftos dated 23 November 2010, page 2.

⁷ Reasons [12].

⁸ Reasons [14].

colour and GCS as at 22:58. The presently relevant details of the progress (or otherwise) of Ms Masson were as follows:

	22:58	23:06	23:14	23:17	23:19
Pulse rate + regulatory (Regular (R) Irregular (I))	150 R	118 R	94 R	136 R	40 R
Respiratory rate + effort (normal (N) retractive (R))	2 R	12 R	14 R	14 R	12 R
Skin colour (normal (N) cyanosed (C))	C	N	N	C	C
Total GCS	6	6	6	3	3
Blood pressure (systolic/diastolic readings)	155/100	165/110	140/100	170/100	No record

- [12] Although the facts that I have set out in that table were not in dispute, there were different interpretations of them in the evidence. Mr Peters testified that, after multiple doses of salbutamol, the patient's breath could be heard and she was becoming easier to ventilate. But Associate Professor Raftos, a senior specialist in emergency medicine at several Sydney hospitals called as an expert in the appellant's case, said there was no substantial improvement and that the only positive sign was the change in colour from cyanosed to "normal". The other parameters, he said, were neutral, showing neither an improvement nor a deterioration.⁹ He explained the significance of the GCS scores in this way: a person with acute severe asthma is unconscious usually for the reason that their breathing has been so poor for a period of time that carbon dioxide accumulates in their blood, acting like an opiate on the brain and putting them to sleep, thereby further compounding the problem in breathing by decreasing their respiratory rate.¹⁰
- [13] Transportation from the scene was commenced at 23:15, immediately prior to the increase in Ms Masson's heartrate (as set out above). At 23:17, she was again cyanosed and her GSC score had fallen further. Her eyes were no longer opening. Within another two minutes, her heartrate had dropped to 40 beats per minute and no blood pressure could be measured. This meant that she was bradycardic because her heart rate was less than 60 beats per minute. A minute later, at 23:20, Mr Peters began the administration of adrenaline, in three doses of 100 micrograms, 60 seconds apart.
- [14] At that point Ms Masson was also suffering bilateral tension pneumothoraces. Consequently the ambulance was stopped, and Mr Peters made an incision in the chest wall thereby allowing trapped air to escape, achieving the decompression of the left lung which was accompanied by an immediate improvement in heart rate and blood pressure.

⁹ Transcript of the Trial Proceedings ("T") 5-32-33.

¹⁰ T5-34.

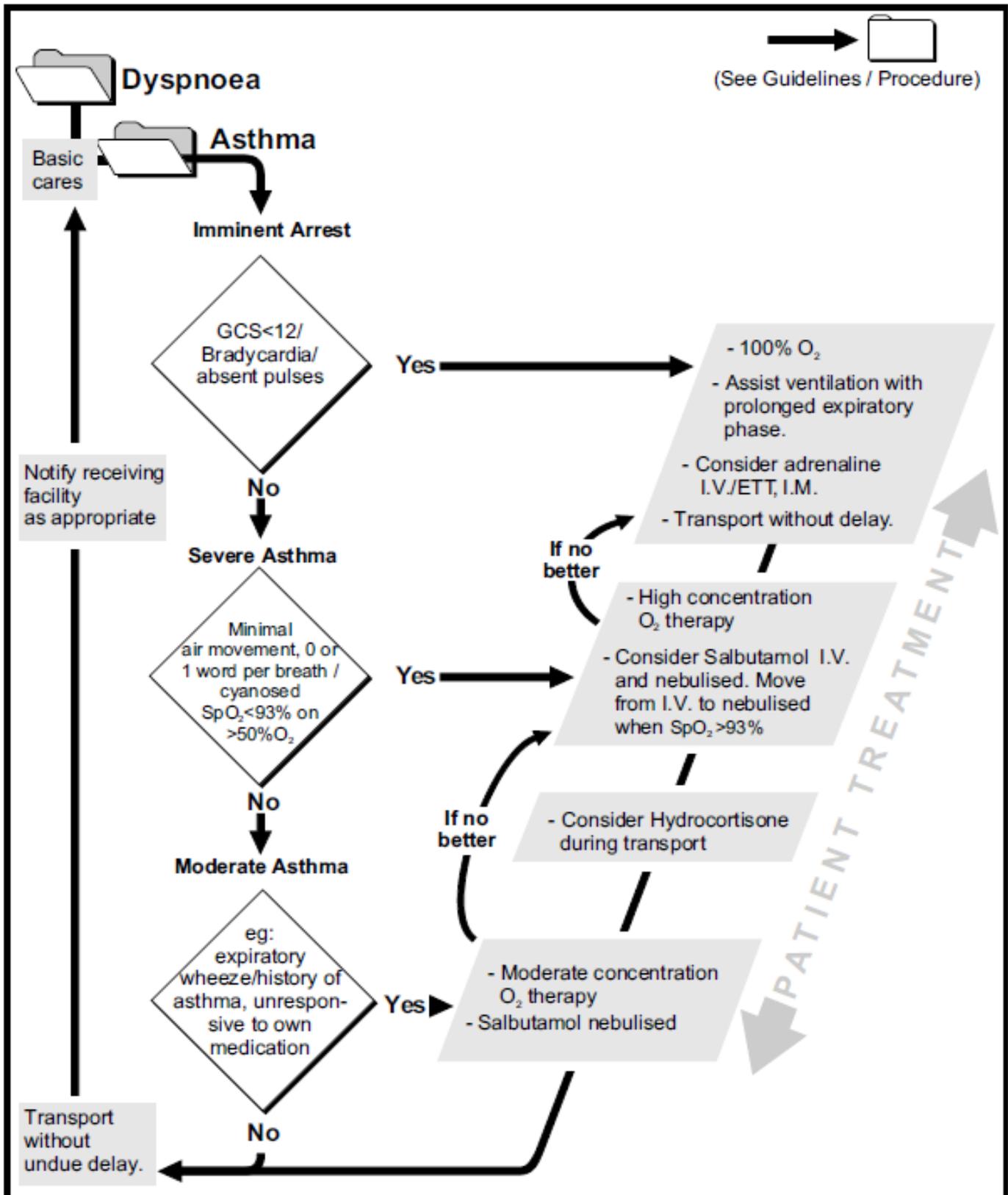
- [15] At the hospital, her condition was recorded as being cyanosed, having no respiratory effort and no carotid pulse. Adrenaline was administered at 23:41, 23:43 and 23:45, which provoked an immediate response with a carotid pulse becoming discernible and increasing.¹¹

The QAS Manual

- [16] The CPM in use at the relevant time had been revised at the beginning of 2002. In its introduction, its stated purpose was to provide QAS officers with a comprehensive guide to prehospital clinical practice. It contained a section headed “Case Management Guidelines” which, the introduction explained, covered a range of clinical conditions common to the prehospital setting to assist officers to arrive at a provisional diagnosis and to provide principles for patient management. The introduction explained that the CPM contained flowcharts for the guidance of officers, with each flowchart containing a diamond icon or icons representing “key clinical decision points”, as well as “shaded text boxes” which listed “the range of prehospital treatments”.
- [17] There were guidelines, in particular, for the treatment of a patient suffering an asthma attack, and a flowchart which was as follows:

¹¹ Reasons [24].

Dyspnoea Asthma



OFFICERS ARE ONLY TO PERFORM PROCEDURES FOR WHICH THEY HAVE RECEIVED SPECIFIC TRAINING AND AUTHORISATION BY THE QAS

- [18] On the page before that flowchart, on the subject of asthma, the text included the following:

“Caution:

Hypoxic asthmatics need high concentration of oxygen. Do not give nebulised salbutamol to severely hypoxic asthmatic patients in preference to oxygen therapy and ventilatory support. Nebulised salbutamol should only be given when air movement is sufficient to move drug to target tissues.”

- [19] At the trial, the parties offered different interpretations of the flowchart, neither of which was wholly accepted by the trial judge.
- [20] For the appellant, it was contended that the case which was presented to the officers was within the first of the “diamonds”, headed “Imminent Arrest”, with the consequence that Ms Masson was to be treated in the way set out in the shaded section opposite that alternative. The officers were to “Consider adrenaline I.V./ETT, I.M.” The appellant’s case was that this meant that adrenaline had to be administered, with the officers to consider only how that was to occur: intravenously (“I.V.”), by an endotracheal tube (“ETT”) or intramuscularly (“I.M.”).
- [21] For the respondent, it was argued that this was not a case within the diamond which was highest on the page, because not every circumstance which was there listed, most particularly bradycardia, was present. Ms Masson was not bradycardic, instead she was tachycardic. Further, had the circumstances been within the first diamond, it was argued that the ambulance officers had to consider whether to administer adrenaline, rather than being directed to administer it.
- [22] The trial judge accepted the appellant’s argument that this was a case of “Imminent Arrest” which was within the first diamond, because not every circumstances there listed had to be present. It was sufficient that the GCS was under 12.¹² However, the judge rejected the appellant’s argument as to the meaning of “[c]onsider adrenaline”, holding that this required the officers to consider whether to administer adrenaline (and if so how), rather than compelling its administration in some form in every case of imminent arrest.¹³
- [23] In my view, the trial judge’s interpretation, in each respect, was correct. The difference between the first and second “diamonds” was between a case of imminent arrest and a less serious case. The officers recorded that Ms Masson had already suffered a respiratory arrest, and there was no divergence in the opinions of relevant witnesses that she was at immediate risk of a cardiac arrest. The trial judge said that if Ms Masson had not reached the point of a respiratory arrest, that was certainly imminent and that “if a person stops breathing, cardiac arrest will soon follow.” He accepted evidence from Professor Fulde (a professor and eminent specialist in emergency medicine), that “if there is not enough oxygen for the brain the heart will imminently arrest due to the lack of oxygen”, so that “[i]t follows that where respiratory arrest is imminent, cardiac arrest is likewise also imminent, that is, death is imminent.”¹⁴

¹² Reasons [115].

¹³ Reasons [106]-[109] and [122]-[130].

¹⁴ Reasons [108].

[24] The trial judge referred to the introduction to the part of the CPM headed “Clinical Pharmacology”, in which officers were instructed that, before using any drug, they should weigh the potential benefits against the potential adverse effects of the drug, with the guidance that “sound clinical judgment is as much about when not to administer drugs as when to give them.”¹⁵ His Honour said that this point was reinforced by the content of the “Drug Data Sheet” about adrenaline (within that section of the CPM), which set out possible adverse effects of the use of that drug. To the judge’s reasoning on this question, I would add that the term “Consider” in the CPM was defined in the “Glossary of Specific Terms”, in appendix 2 of the CPM, as follows:

“When this term is used it implies that the ambulance officer has to make a judgement regarding application of the following treatment modalities based on potential benefits and adverse effects. It does not imply that the following treatments are automatically appropriate or sanctioned. Consultation should be used if doubt exists.”¹⁶

[25] The Drug Data Sheet within the CPM contained particular facts about adrenaline and salbutamol. For adrenaline, it provided that the drug acted in several ways, which included the causing of bronchodilation (dilation of the bronchial passages) and increasing the heart rate. It described the conditions for which the use of the drug was indicated as:

- Cardiac arrest;
- Bradycardia and/or poor perfusion unresponsive to other measures;
- Anaphylactic reactions;
- *Bronchospasm unresponsive to Salbutamol*;
- Croup with life threatening airways compromise (nebulised).

(Emphasis added.)

The side effects of adrenaline were listed as:

- Palpitations;
- Tachyarrhythmias;
- Hypertension;
- Pupillary dilation;
- Anxiety.

[26] The impact of adrenaline was described by reference to the time at which it would start to take effect, the time at which the drug would have its peak effect and the duration of its effect. For adrenaline administered intravenously, the “Onset” was said to be 30 seconds, the “Peak” was said to be two minutes and the “Duration” was said to be five to 10 minutes.

[27] There was a specific caution that:

¹⁵ Reasons [126].

¹⁶ The word “Consultations” was defined in the glossary as: “The procedure of verbally liaising on a case by case basis with an appropriate medical officer for advice and/or authorisation on specific treatment modalities.”

“The use of adrenaline may lead to hypertension, stroke, MI or a life threatening arrhythmias.”

[28] The Drug Data Sheet set out the usual dosages for adrenaline (relevantly here) for a patient with “Asthma or severe bronchospasm with imminent arrest”. The trial judge accepted the evidence of two witnesses called in the appellant’s case, Professor Fulde and Mr Kenneally (an expert paramedic), that “asthma or severe bronchospasm with imminent arrest” described Ms Masson’s situation at the time of the initial treatment.¹⁷

[29] The Drug Data Sheet for salbutamol relevantly provided as follows. It described the “action” of the drug as being:

- Bronchodilation;
- Relaxation of smooth muscles.

It said that the administration of the drug was indicated in cases of:

“Bronchospasm associated with:

- Asthma;
- Severe allergic reaction”.

It described the side effects of salbutamol as including tachycardia and tachyarrhythmias.

[30] As to the timing of the effect of salbutamol, if administered intravenously, it said that the drug had an “Onset” of one to three minutes, a “Peak” of five to 10 minutes, and a “Duration” of 10 to 20 minutes.

[31] As I will discuss, there was a substantial divergence in the opinion evidence called from medical experts as to the advantages or otherwise of one drug over the other. Those who were called in the appellant’s case said that adrenaline was the indicated or preferred drug for a patient in this condition, and those called in the respondent’s case said that salbutamol was just as effective in the dilation of the bronchial passages. There was a further issue as to the relevance and extent of the risk of side effects from using adrenaline for a patient, such as Ms Masson, who had a high pulse rate and high blood pressure.

[32] In the submissions for the appellant in this Court, it was strongly argued that there was a critical difference between the timing of the effects of the two drugs, which demonstrated the reason for preferring adrenaline in a case, such as this, where the patient was at imminent risk of death. Professor Fulde said that this patient was “really, really, close to death”,¹⁸ and Professor Brown, a medical specialist called in the respondent’s case, said that when the officers arrived Ms Masson could have had a cardiac arrest “at any moment”.¹⁹

[33] Unfortunately, the trial judge’s attention was not drawn to those parts of the CPM that referred to the timing of the effect of the drugs nor were relevant witnesses asked to address them. That might be thought to detract from the weight which this Court should give to that evidence. However, the meaning and relevance of what

¹⁷ Reasons [105].

¹⁸ T5-14.

¹⁹ T6-75.

was there written is plain and it does provide support for the appellant's case that adrenaline was likely to have been the more effective drug for bronchodilation.

- [34] There are other parts of the CPM which indicate the difference between the drugs for a patient in this condition. In the Drug Data Sheet for adrenaline, it was said that the use of the drug was indicated where bronchospasm was unresponsive to salbutamol. Directions were given for the quantities of adrenaline to be administered, and the qualifications of the paramedic who could do so, in the case of "Asthma or severe bronchospasm with imminent arrest", whereas there was no reference to a case of that severity in the sheet for salbutamol.
- [35] The perceived difference between the two drugs was evident from the flowchart. For a patient who was at the point of imminent arrest, only adrenaline was to be considered, rather than adrenaline or salbutamol. It was in a less severe case than one of imminent arrest that salbutamol was to be considered. The flowchart indicated that adrenaline might be considered if the patient did not respond to salbutamol, but not vice versa.
- [36] I discuss below the divergent medical opinion as to the respective benefits and risks of the two drugs. At this point, what is being considered is the effect of the CPM, which is a representation of the opinion of the QAS at the time. It is thereby remarkable that the respondent's ultimate case was inconsistent with it, by contending that the two drugs were equally effective in effecting bronchodilation.
- [37] Although that was the respondent's ultimate case, it was not its pleaded case. Rather, its pleaded case was that the administration of salbutamol which occurred was "required" if the patient was "CGS < 12, tachycardic, with peripheral pulse palpable". The respondent pleaded that under the CPM, Ms Masson did not "fulfil the definition of "imminent arrest" and administration of intravenous Adrenalin was not permitted."²⁰
- [38] The respondent further pleaded that it was not until Ms Masson became bradycardic for the first time, between 23:20 and 23:24, that she "met the QAS criteria for the administration of intravenous Adrenalin".²¹
- [39] That case was rejected by the trial judge in that, as I have discussed, he correctly interpreted the CPM and the evidence as requiring, in this case, the consideration of the use of adrenaline at the time when salbutamol was first applied.

The evidence of Mr Peters

- [40] Mr Peters was the senior officer and the determinative decision maker at the scene.²² He gave oral evidence and two witness statements made by him, dated in February 2006 and July 2009, were also tendered.
- [41] In the first statement, he detailed the treatment which Ms Masson received at the scene and during her transportation to the hospital. Mr Peters' statement in 2009 is more detailed and, significantly, described his consideration of the drug to be administered. After relating the measurement of Ms Masson's heartrate, at 150 beats per minute, Mr Peters said this:

²⁰ Amended defence to the second amended statement of claim paragraph 4(a)(x).

²¹ Amended defence paragraph 4(a)(xvi).

²² Reasons [8].

- “28. The QAS guidelines for the management of a patient with asthma, in July 2002, are set out in section A2-7 to A2-8 of the CPM ... The management is determined having regard for the patient's clinical presentation and vital sign recordings and may include: high concentration oxygen therapy; intravenous Adrenalin if bradycardic (pulse rate less than 60 beats per minute) or absent pulses; nebulised and intravenous Salbutamol; and consideration for intravenous Hydrocortisone.
29. In view of the fact that Ms Masson was tachycardiac, that is she had a heart rate that was greater than 100 beats per minute and peripheral pulse were palpable, intravenous Adrenaline was not permitted under the Asthma protocol. I therefore elected to administer intravenous Salbutmol [sic].”

[42] The 2009 statement also detailed Mr Peters’ consideration of the administration of adrenaline as follows:

- “36. At approximately 23:19, I noted that Ms Masson's became increasingly difficult to ventilate, her breath sounds were diminishing bi-laterally and her heart rate slowed from 136 beats per minute (which was the reading displayed on the cardiac monitor immediately prior to 23:19) to a bradycardia with a palpable carotid pulse. Her Glasgow Coma Score was 3 and the monitor was unable to record a blood pressure. I believed at this time Ms Masson was suffering a further episode of severe bronchospasm, due to the bi-lateral and progressive loss of breath sounds.
37. As Ms Masson was bradycardic and hypotensive, she met the criteria for the administration of intravenous Adrenaline. I instructed Officer Stirling to prepare intravenous Adrenaline 1:10,000 x 300 mcgs (100mcg x 3) which were then administered under my authority at approximately 23:20. The Adrenaline was administered in accordance with the guidelines set out in the Adrenaline drug data sheet or B-6 of the CPM ...”

[43] As to the first of those extracts, the unambiguous statement of Mr Peters was that the administration of adrenaline was not permitted by the CPM. In that respect, it might be inferred that the statement was the basis for the respondent’s pleading which I have described above at [21]. There is no reference in the statement (or the earlier statement) to a consideration of adrenaline as an alternative to salbutamol. Nor is there a reference to Ms Masson being in the category of “imminent arrest”. On the face of the statement, Mr Peters misunderstood the CPM, by thinking that Ms Masson’s tachycardia precluded the possible use of adrenaline. The same reasoning is evident from paragraph 37 of his 2009 statement, where Mr Peters said that it was only when Ms Masson became bradycardic that she met the criteria for the administration of adrenaline.

[44] In examination in chief, Mr Peters was asked why he administered salbutamol when he first did. He said that:

“From my assessment of the patient, her clinical presentation, the information that we quickly gleaned from the bystanders of her history, led me fairly convincingly to the fact that she required immediate pharmacological intervention through IV salbutamol ... She had a severely ... depressed respiratory rate. She ... was centrally cyanosed. So she was blue. She ... had a hyper-inflated chest. [Another officer] advised me that she was very difficult to assist oxygenation. So she was very tight in her airways. She was hypertensive, tachycardic, had an altered level of consciousness, and had a history of severe asthma.”²³

- [45] A little further on, again in examination in chief, Mr Peters was asked why he administered adrenaline when he did. He answered:

“Her vital signs had deteriorated to the point where adrenaline was the most appropriate drug for her clinical presentation. ... she was now bradycardiac. She had a slow heart rate; less than 60. And – although it’s not recorded there, she either was or [was] about to be hypotensive ... her vital signs were trending towards bradycardia and hypotension.”²⁴

- [46] In cross-examination, Mr Peters was taken to his statements in 2006 and 2009. Mr Peters described the process of their preparation: he typed the draft of each statement, which was amended by others to add references to the CPM, before he signed it. He made no suggestion that the statements were inaccurate in any respect.

- [47] He was cross-examined about the CPM. He was asked about the dosages which were set out in the CPM for salbutamol, which for a patient aged under 50, was a quantity of 250 mcg administered slowly over one minute, with a repetition, if required, every 5 minutes but with a maximum application of 1 mg. He agreed that he had administered two milligrams of salbutamol and within a period of no more than 20 minutes.²⁵ When it was suggested that he did not administer salbutamol in accordance with the guideline in the CPM, but “double[d] the guideline”, Mr Peters answered “[t]hat’s reasonable”, adding that the dosages he administered were a “response to her physical presentation and assessment of her vital signs and condition.”²⁶

- [48] The cross-examiner suggested that it was Mr Peters’ belief, in July 2002, that he was “prohibited from administering adrenaline because of the content of the asthma guidelines”, to which he answered:

“No, I was prohibited from administering adrenaline with a patient’s vital signs as Jennifer’s were presenting”.²⁷

In his next answer, he again confirmed that he held the belief that he was prohibited from administering adrenaline (until adrenaline was administered).

- [49] At this point there was a series of questions from the judge resulting in this evidence:

²³ T2-64.

²⁴ T2-71.

²⁵ T3-33.

²⁶ T3-33 to 34.

²⁷ T3-36.

“HIS HONOUR: At the time is that what your belief was?---At the time the guideline indicated that I should give IV salbutamol and that adrenaline was the inappropriate drug for Jennifer's presentation.

You may have covered this yesterday, I can't recall, but I just – can I just double check. Do you recall one way or the other, whether when you were initially making your decision that led you introducing salbutamol - - -?---Yes.

- - - whether or not in making that decision you gave consideration to the option of using adrenaline? Do you remember one way or the other whether you considered that option then?---Not really. It was - it was very clear which pathway I was required to go down.

So does “not really” mean you didn't – you don't remember one way or the other or you recall that you did not consider that option?---I would have considered both adrenaline and IV salbutamol, and IV salbutamol was clearly the defined pathway I was required to go down.

So you're saying you would have considered the option of adrenaline. Do you recall actually considering it?---Certainly. So if Jennifer was initially presenting bradycardic/hypotensive, would have been straight into adrenaline. So it certainly would have been considered. So both options would have been in any mind in preparation for my actions dependent on how she presented.”²⁸

[50] Further cross-examination then followed:

“MR CAMPBELL: You, as I understand your evidence – because she was tachycardic said you were prohibited, you were not permitted, you were unable to administer adrenaline?---That's one of the parameters. The other one was her blood pressure. So she was tachycardic and hypertensive.

And if the position were that the guidelines permitted the administration of adrenaline in circumstances where the patient had a Glasgow Coma Score of less than 12, you, because of the fact of there being tachycardia, believed you could not implement those guidelines. Is that right?---Tachycardia and hypertension, considering all the components of the – of the assessment tool.

And is that as a result of something that you were trained in or was this as a result of your interpretation of the words in the guideline?---Both. So there was quite a – a specific module on the appropriate pharmacological treatment of asthma in the intensive care paramedic program. It was both some reading material, there was verbal tutorials and there was case scenarios.

Because there's a distinction between an absent pulse and bradycardia, isn't there?---Correct.

If you've got bradycardia you can't have an absent pulse, can you?---You can have a monitored rhythm that is bradycardic and have an

absent pulse. That's called a pulseless electrical activity. However, if you can palpate a pulse and – you can still be bradycardic and palpate a pulse.

Correct. And you can be of a Glasgow Coma Score of less than 12 but still have a pulse?---Correct.

And you can be of a Glasgow Coma Score of less than 12 and not be bradycardic?---Correct.

And you can still be in imminent arrest or already have arrested in circumstances where you have a Glasgow Coma Score of less than 12?---Correct.

The guideline, I suggest, is designed to provide for a course of treatment for persons who are either in imminent arrest or have arrested by reason of asthma. That's the position, isn't it?---Not – the term “imminent arrest”, I think, requires more qualification. Jennifer was critically ill.

She'd arrested?---She hadn't arrested.

Well, she had already had a respiratory arrest? ---Yeah, but she was not in cardiac arrest.

Well, it doesn't say cardiac arrest?---By – by ---

You could be in respiratory arrest?---By “imminent arrest” I believe they refer to cardiac arrest.

But it doesn't say that, does it?---I – doesn't appear to.”²⁹

- [51] A little further on, when asked about the flowchart, Mr Peters disagreed with the suggestion that, if the patient had a GCS of under 12, the patient was to be treated according to what appeared in the shaded area indicated by the arrow opposite the diamond that referred to the GCS score. Mr Peters said “No, the – so each of those boxes has to be considered as a whole with all the components, and also linking components in the next box.”³⁰
- [52] The cross-examiner suggested that Mr Peters gave no consideration to the patient’s reduced level of consciousness when he “elected to move down the treatment path”, with which Mr Peters “completely” disagreed.³¹ When it was suggested that “Nowhere in any of the statements that you have prepared have you set out your taking into consideration her reduced level of consciousness, namely Glasgow Coma Score of six and then later three”, Mr Peters disagreed saying “That’s clearly documented on the ambulance report form”.³² At the same time Mr Peters did not suggest that there was something in his statements of 2006 or 2009 which referred to the matter.

The findings about the evidence of Mr Peters

²⁹ T3-36 to 37.

³⁰ T3-38.

³¹ T3-39.

³² T3-39.

- [53] The judge noted that the only other ambulance officer called, Ms Stirling, gave no substantive evidence on the decision-making at the scene,³³ thereby focussing attention on whether Mr Peters did consider the administration of adrenaline at the time of the initial treatment.
- [54] The trial judge described Mr Peters' extensive experience and apparent expertise as an ambulance officer, although, it should be noted, he was a full-time ambulance officer with six years of experience in 2002. He became authorised to administer salbutamol in 1996 and adrenaline in 2000. He testified that his training within the QAS included instructions about the use of the CPM.³⁴
- [55] The trial judge rejected the appellant's submission that the administration of adrenaline was not considered at all during the initial treatment phase, saying that "On any view adrenaline was considered, albeit in the context of considering it should not be administered because of the presence of tachycardia and hypertension."³⁵
- [56] The trial judge then discussed the witness statement by Mr Peters, dated in July 2009. He referred to a passage from that statement in which Mr Peters described the initial treatment as including oxygen therapy and assisted ventilation, which the judge noted were the first two of the actions prompted by the CPM if the arrow to the first diamond in the flowchart was followed. The trial judge said that this was "powerful evidence in support of the inference that the flowchart's first arrow to the right was followed."³⁶
- [57] The trial judge then set out that part of the 2009 statement, which I have described above at [41]. His Honour then said:³⁷

"[143] The above passage curiously introduces the term "protocol", which is not a term used in the manual. I doubt it is term favoured by Mr Peters, whose evidence showed he understood a protocol requires the taking of a fixed course whereas a guideline permits a greater flexibility of response allowing for the application of clinical judgment. In the context of the above statement the reference to protocol was apparently a reference to the asthma guideline and the flowchart within that guideline. The reasons proffered in Mr Peters' statement for asserting the administration of adrenaline "was not permitted" are confusing. They were seemingly the presence of the high heart rate and the presence of peripheral pulse. It will be recalled the indicia in the first diamond of the flowchart include two indicia which are the opposite of those, namely bradycardia and absent pulses. This suggests that by the time of the statement Mr Peters was favouring an interpretation of the first diamond of the flowchart to the effect that the presence of indicia opposite to any of those listed in the diamond precluded the following of the arrow to the right of the diamond.

³³ Reasons [131].

³⁴ Reasons [132].

³⁵ Reasons [139].

³⁶ Reasons [141].

³⁷ Reasons [143]-[144]. Footnotes omitted.

- [144] There is reason to doubt whether that was the interpretation given at the time of treatment, in light of the fact some of the initial treatment was the very treatment contemplated by the arrow to the right of the first diamond. In any event, such an interpretation is wrong at two levels. Firstly, it is the presence in a patient of at least one of the indicia listed in a flowchart diamond which is the operative consideration, not the presence of any indicia opposite to that listed. Secondly, the asthma guideline does not proscribe, in the sense of permitting or precluding. Rather, on the manual's own terms, it is provided to guide and assist diagnosis and patient management and it may be deviated from."
- [58] The judge then discussed the oral evidence of Mr Peters on this question, which I have set out above.
- [59] The trial judge expressed his conclusions about the evidence of Mr Peters in these terms:
- “[146] The tone and manner in which the above answers were given made it obvious that Mr Peters had difficulty, doubtless because of the very long lapse of time (if not perhaps the contaminating contributions of others in legal forums), in distinguishing between hindsight assumption and actual recollection. It is clear however that Mr Peters well appreciated that salbutamol and adrenaline were potential pharmacological options in treating an asthma attack. It is similarly obvious on the whole of his testimony that he considered Ms Masson's tachycardia and hypertension mitigated against the administration of adrenaline. As he said in the above quoted passage had she instead been bradycardic and hypotensive, he would have administered adrenaline.
- [147] I have already concluded there would have existed a responsible body of opinion in the medical profession in support of the view that Ms Masson's tachycardia and hypertension, in the context of her overall condition, provided a medically sound basis to prefer the administration of salbutamol as an acceptable option to the administration of adrenaline. The clinical assessment that the use of adrenaline in a tachycardic, hypertensive patient might matter worse, for instance causing the heart to stop, provided a reasonable clinical basis to consider that adrenaline was too risky and to first favour the more conservative course of administering salbutamol.
- [148] On a careful consideration of the whole of Mr Peters' testimony I am satisfied he did make such a clinical assessment, considering the possibility of administering adrenaline, deciding not to administer it because of the risk of serious adverse reaction to it raised by the presence of tachycardia and hypertension and instead deciding to administer salbutamol. The fact that he considered the administration in the context of rejecting it, because of the

presence of those conditions, does not mean it was not considered at all. Such a clinical assessment and decision was a reasonable response to the risk associated with Ms Masson's oxygen deprivation as well as the risk of pharmacological intervention worsening her already dire condition.

[149] In arriving at that conclusion, I am conscious of the curious and erroneous references in Mr Peters' evidence to the asthma guideline prohibiting or not permitting the administration of adrenaline. However, they are not inconsistent with him also having considered, as I find he did, that the administration of adrenaline was too risky by reason of Ms Masson's tachycardia and hypertension."

[60] At this point, something should be said of the advantage of adrenaline over salbutamol in the case of a patient who is bradycardic. Each of these two drugs can have the effect of dilating the bronchial passages. Each has the effect of what is called a β_2 -agonist. As the CPM stated, adrenaline also can increase the heart rate, thereby explaining its indicated use in cases of "Cardiac arrest" and "Bradycardia and/or perfusion unresponsive to other measures." As the CPM also stated, adrenaline can have side effects which include palpitations, tachyarrhythmias and hypertension. The point is that, whilst adrenaline has a particular use for a patient who is bradycardic, it does not follow that it does not have a proper use for a patient who is tachycardic. Notably, the flowchart does not refer to tachycardia, let alone suggest that it could be a reason for not using adrenaline where it was otherwise the indicated drug.

[61] It is said that the trial judge had the advantage of seeing and hearing the evidence of Mr Peters as it was given in Court. But I am unable to accept his Honour's analysis of the tension between the 2009 witness statement and some of the oral evidence of Mr Peters. The witness statement is unambiguous: Mr Peters there said that, by the terms of the CPM, more particularly the flowchart, the use of adrenaline was not permitted. That was a misstatement of the effect of the CPM. Nevertheless it was apparently the carefully considered recollection of the witness at a time which was closer to the event.

[62] In his oral evidence, Mr Peters did not say that there was a mistake in his witness statement, and that what he had meant to say was that the use of adrenaline was open, but that he did not administer it because of a concern about the risk of side effects, such as a stroke.

[63] And it was the respondent's pleaded case that Ms Masson did not fall within the description of "imminent arrest" and therefore the administration of adrenaline was not permitted.

[64] Further, in some parts of his oral evidence, which I have discussed at [48], Mr Peters gave evidence, consistently with his 2009 statement, that he was "prohibited" from administering adrenaline, on his understanding of the effect of the CPM.

- [65] In answer to one of his Honour's questions,³⁸ Mr Peters said that he "would have considered both adrenaline and IV salbutamol", but added that "salbutamol was clearly the defined pathway I was *required* to go down." Even then, Mr Peters appeared to say that the "pathway" was prescribed by the CPM, as he interpreted it. In my respectful view, the evidence of Mr Peters did not support the trial judge's finding, at [148] of the Reasons, that Mr Peters did make "a clinical assessment, considering the possibility of administering adrenaline, deciding not to administer it because of the risk of serious adverse reaction to it raised by the presence of tachycardia and hypertension and instead deciding to administer salbutamol." At no point in his testimony did Mr Peters say that he was concerned by the risk of a serious adverse reaction to adrenaline, which he then weighed against the apparent benefits, according to the CPM, of adrenaline as the preferred drug for a patient in the category of "imminent arrest".
- [66] At [147] of the Reasons, the judge referred to what he described as "a responsible body of opinion in the medical profession in support of the view that Ms Masson's tachycardia and hypertension, in the context of her overall condition, provided a medically sound basis to prefer the administration of salbutamol as an acceptable option to the administration of adrenaline." But Mr Peters did not say that he was applying that body of opinion; his evidence was that the course he took was prescribed by the CPM. In my opinion, the trial judge erred in finding that Mr Peters made the clinical assessment which his Honour described at [148] of the Reasons. The finding was not only inconsistent with the 2009 statement by Mr Peters, it was also inconsistent with his oral evidence.

The medical evidence

- [67] Each side called opinion evidence from three medical specialists and an expert paramedic. There was a marked division of opinion between the two groups of witnesses about whether salbutamol was as effective as adrenaline for a patient in Ms Masson's condition and whether the risk of adverse side effects from adrenaline was unacceptably high. The witnesses called in the appellant's case were Professor Fulde, Associate Professor Raftos, Dr Vinen and Mr Kenneally. Those called in the respondent's case were Professor Brown, Associate Professor Boots, Associate Professor Ramin and Mr Hucker. I will refer to their professional positions as they were at the time of the trial.

Professor Fulde

- [68] Professor Fulde is an Adjunct Professor of Emergency Medicine at Notre Dame University and an Associate Professor of Emergency Medicine at the University of New South Wales. He is the Director of the Emergency Department at St Vincent's Hospital in Sydney and the Senior Medical Officer-in-Charge at the Sydney Hospital Emergency Department. He was a founding Fellow of the Australasian College for Emergency Medicine and is a member of the Senior Court of Examiners for that College. He is also an examiner for the Royal Australasian College of Surgeons. The trial judge described Professor Fulde as "at times distractingly emphatic in the witness box", but not in a way which undermined his credibility.³⁹

³⁸ As set out above at [49].

³⁹ Reasons [45].

- [69] The evidence in chief of Professor Fulde was in the form of four reports and he was cross-examined. In his first report, Professor Fulde said that Ms Masson was within the category “imminent arrest” (in the flowchart in the CPM) because, he said, “This patient had arrested. Her GCS was 6”. He observed that according to the flowchart, the ambulance officers were thereby required to “consider adrenaline I.V./ETT, I.M.” and to “Transport without delay”. The QAS records of her respiratory rates did not reflect any air entry or oxygenation so that the patient was “clinically arrested”. He said that adrenaline, and not salbutamol, was the indicated drug. He said that, even without knowing this patient’s past history, he would be of the view that had adrenaline been administered early, hypoxic (meaning deprived of oxygen) brain damage would not have eventuated in this case.
- [70] In his second report, he considered the first report of Professor Brown. His opinions were unchanged. He disagreed with Professor Brown that, when salbutamol was first applied (at 22:58), severe hypoxic brain damage had already occurred. As I have noted, that view of Professor Brown was inconsistent with the conclusion of the trial judge, who found that it was not then too late for Ms Masson’s injury to be avoided by the administration of adrenaline.⁴⁰ More specifically, the judge discussed that difference of opinion between the two witnesses and preferred the evidence of Professor Fulde on that point.⁴¹
- [71] Professor Fulde’s third and fourth reports responded to reports by Associate Professor Ramin. In his report of September 2012, Associate Professor Ramin disagreed with Professor Fulde that when Ms Masson was first treated, she was within the category of “imminent arrest” in the CPM, because, in his view, that referred to a patient with a GCS under 12 with either bradycardia or absent pulses. Associate Professor Ramin added, however, “that with life threatening asthma this situation can change within seconds ...” Professor Fulde said that Ms Masson was within the category of “imminent arrest” and the trial judge appears to have accepted his evidence in that respect. His Honour said that Ms Masson’s death was imminent when ambulance officers arrived on the scene and, in the terminology of the CPM asthma guideline, her arrest was imminent.⁴² His Honour expressly adopted Professor Fulde’s explanation that, if a person stops breathing, cardiac arrest will soon follow, so that “where respiratory arrest is imminent, cardiac arrest is likewise also imminent, that is, death is imminent.”⁴³
- [72] His Honour thereby rejected the respondent’s argument that Ms Masson was not at risk of an imminent cardiac arrest because she was bradycardic.⁴⁴
- [73] In his fourth report, Professor Fulde said that the term “bronchospasm associated with asthma”, in the Drug Data Sheet for salbutamol, had to be read as applying to a patient who is a “breathing asthmatic” with bronchospasm, in which case the administration of salbutamol would be “standard and reasonable peer practice”. That evidence, and evidence to the same effect by Mr Kenneally, was accepted by the trial judge.⁴⁵

⁴⁰ Reasons [182].

⁴¹ Reasons [174]-[175].

⁴² Reasons [107].

⁴³ Reasons [108].

⁴⁴ Reasons [109].

⁴⁵ Reasons [105].

- [74] In cross-examination, Professor Fulde said that adrenaline was the drug of choice for a case of a patient at risk of death, which he said was indicated clearly by the CPM and peer practice throughout Australia. He said that if a patient is still breathing, salbutamol has its place, but if the patient is not breathing, it is adrenaline which must be administered. This patient was not breathing, he said, because her respiratory rate was 2, there was cyanosis and she had had a respiratory arrest according to the notes of the ambulance officers.⁴⁶
- [75] Professor Fulde said that too much or a lot of salbutamol will increase a patient's blood pressure,⁴⁷ as was stated in the CPM's Drug Data Sheet for salbutamol under the heading "Side Effects".
- [76] He agreed that had she been given adrenaline immediately, Ms Masson's pulse rate and her blood pressure would have increased, but he said "you are taking with that what the drug also does for ... occluded airways."⁴⁸ He observed that this was a young patient whose heart and cardiovascular system were very good.

Associate Professor Raftos

- [77] Associate Professor Raftos is an Associate Professor of Medicine at the University of New South Wales and is a specialist practitioner in emergency medicine, with extensive experience at Sydney hospitals. He was Director of Emergency Services at Sutherland Hospital for many years. His evidence in chief was contained in four reports and his oral evidence was given under cross-examination.
- [78] In his first report, Associate Professor Raftos explained that a small number of individuals have severe brutal asthma, in which an attack may develop suddenly and may progress rapidly to severe, life-threatening asthma. He said that in such cases, the treatment should include "intravenous salbutamol 300mcg over one minute, followed by salbutamol infusion at 5 mcg / minute" and "intravenous adrenaline 0.01 mg / kg to a maximum of 0.5 mg by slow intravenous injection followed by adrenaline infusion titrated to effect". He said that the large dosage of salbutamol applied to this patient "would be expected to have an almost immediate effect on the asthma with prompt improvement in breathing and oxygen saturation, *if it was going to have an effect.*" (Emphasis added.) He said that appropriate management would have been to give the patient intravenous adrenaline after one or two minutes if the salbutamol had had no effect by then. Because the patient remained cyanosed and in respiratory arrest after the salbutamol given at 22:59, the appropriate response would have been to give intravenous adrenaline of 0.3 to 0.5 mg intravenously between 23:00 and 23:02. The patient was then still unconscious and had minimal air movement, and so was "in extremis" (meaning that her death was imminent).⁴⁹ The failure to give intravenous adrenaline, after the patient did not respond to salbutamol by 23:00, was a departure from competent professional practice and, on the balance of probabilities, made the difference for recovery from this attack.
- [79] His second report responded to a report of Professor Brown. In this report, Associate Professor Raftos appeared to vary the opinion expressed in his first

⁴⁶ T5-15.

⁴⁷ T5-8-9.

⁴⁸ T5-15.

⁴⁹ Reasaons [107].

report, by this time saying that the failure to give adrenaline “as soon as [the ambulance officers] had established venous access ... represents a departure from what would have been widely accepted by peer professional opinion ... to be competent professional practice.”

[80] In his third report, written in response to a report of Associate Professor Ramin, he said that according to the CPM, the ambulance officers should have given adrenaline at 23:00.

[81] In his fourth report, again responding to a report of Associate Professor Ramin, he said:

“It has always been my experience that adrenaline is more effective in treating patients in extremis with acute asthmas than salbutamol and that adrenaline is the drug of first choice in those patients. There is no problem with giving both adrenaline and salbutamol.”

Responding to a statement by Associate Professor Ramin that “there is no conclusive evidence for [the use of adrenaline] in such circumstances”, Associate Professor Raftos said that is “true of the great majority of medications and medical treatments, that is there is no conclusive evidence by way of controlled clinical trials for the efficacy of most medical treatments. ... When a treatment is obviously effective, there is usually no need or incentive to statistically prove its efficacy.” Because “Ms Masson had effectively stopped breathing” he would have treated her with adrenaline as “the drug of first choice.”

[82] In cross-examination, he said that at the outset the use of salbutamol was reasonable, just as adrenaline would have been reasonable. He said that when the response to salbutamol was not sufficient, the ambulance officer should have proceeded promptly to the use of adrenaline because, in his view, there had been no substantial improvement following the injection of salbutamol in this case. In his opinion, the only positive sign after the initial use of salbutamol was a change in colour from the cyanosis to a normal colour, as “the other parameters were neutral.”

[83] He said that the intravenous administration of salbutamol was *an* appropriate first choice, because it has “less adverse effects ... than adrenaline when you give it intravenously and it’s the standard medication to be used ... in the first instance and so that’s what you would do.”

[84] In re-examination, he said that apart from the effect of reducing the cyanosis, the salbutamol had done nothing from the point of view of the patient’s vital signs and that more aggressive therapy was then required.

[85] The trial judge was critical of Associate Professor Raftos as a witness. His Honour quoted the statement in the second report which I have set out above before saying this in the Reasons:

“[79] That opinion, contained in his report, was not maintained so forcefully in the witness box. Associate Professor Raftos accepted in cross-examination that it was reasonable to have used salbutamol. He qualified that concession somewhat, by explaining the administration of salbutamol should have been followed by the administration of adrenaline much sooner, because, notwithstanding the changes in some aspects of Ms Masson’s condition, she was effectively unconscious,

likely as a result of the carbon dioxide levels, meaning that more aggressive therapy in the form of the administration of adrenaline was called for promptly. This was a rather unconvincing qualification to the above concession given that for a while after the administration of salbutamol there was actually an improvement in respiratory rate and auscultation indicated improved air movement, making it reasonable to think the salbutamol was having a positive effect.”

(Footnotes omitted.)

- [86] In my respectful view, the correctness of that reasoning must be doubted, firstly because in referring to “his report”, the judge appears to have overlooked the content of Associate Professor Raftos’ other reports, in which he explained the opinion which he repeated in cross-examination. As I have said, there was something of a change in direction in the second report of the witness, for which his evidence overall might have been criticised. But the judge’s impression seems to have been that the effect of his written evidence was weakened by cross-examination, when that was not the case when the other reports are considered. Further, the trial judge found this opinion, that adrenaline should have been administered much sooner than it was because salbutamol was not having the required effect, to be unpersuasive because it was inconsistent with the evidence of Mr Peters that there was an improvement in the patient’s respiratory rate and what could be heard through a stethoscope. In the evidence of Mr Peters to which the judge then referred, it was said that there was an indication of an improvement in air movement. But that fact, of itself, did not prove an error in the opinion of Associate Professor Raftos, who said that the relevant signs (apart from the change in the skin colour) were neutral. In particular, it can be seen from the QAS records that the GCS remained at 6 from 22:58 through to 23:17 when it dropped further (to 3).

Dr Vinen

- [87] Dr Vinen is an emergency physician, and was head of the Department of Emergency Medicine at Royal North Shore Hospital from 1987-1999. He assumed a new role as Director of Emergency Support Services at that hospital which he eventually left in 2008 to take up a position as a specialist in emergency medicine at a hospital outside Sydney. His evidence was contained in three reports and oral evidence under cross-examination.
- [88] The trial judge remarked that Dr Vinen’s reports were premised on a misunderstanding of the QAS records, to the effect that Ms Masson had suffered a cardiac arrest four minutes after the administration of salbutamol. His Honour correctly observed that cardiac arrest did not occur until Ms Masson was being transported to hospital. Nevertheless, his Honour said that that mistake did not “compromise the foundation of all of Dr Vinen’s evidence, though such of his opinions as were founded on it shall be disregarded.”⁵⁰
- [89] In his first report, he said that the patient was in fact in extremis when first assessed by the ambulance officers, which Dr Vinen said meant that, under the CPM, the administration of adrenaline and urgent transport was indicated. He said that early administration of adrenaline in those circumstances was “essential in order to

⁵⁰ Reasons [45](iii).

increase the likelihood of a good outcome” and that “[a]ny delay in administering adrenaline as indicated by the [CPM] can result in an adverse outcome.”

- [90] In his second report, which was written in response to a report by Associate Professor Boots, Dr Vinen’s opinion was unchanged.
- [91] His third report was written in response to a report by Professor Brown. He disagreed with Professor Brown’s opinion that the patient was not in extremis. He noted that the ambulance officers had recorded that she had had a respiratory arrest and that her GCS was 6. Dr Vinen said that scores of 3 to 8 are found in patients who are said to be in a coma. Further she was in extremis although she had tachycardia and “good blood pressure”.
- [92] In his oral evidence, again he said that the use of adrenaline was indicated from the outset. But further, he said that once the first does of salbutamol was given and it had failed to work, that again was an indication to start adrenaline rather than to give more salbutamol.
- [93] At an early stage of his oral evidence, the cross-examiner appeared to disavow a suggestion that adrenaline was the wrong drug to give at the outset.⁵¹ Instead the cross-examiner then suggested that salbutamol was “equally an appropriate drug to give in the case of a respiratory arrest with no signs of cardiac arrest”, to which Dr Vinen answered “No, I don’t agree with that.” Dr Vinen said that salbutamol was “not the best drug to use” with a patient who was acidotic (meaning a build-up of acid in the bloodstream) and that “adrenaline is by far more – superior”.
- [94] Further on, the cross-examiner again suggested that salbutamol was equally appropriate, without suggesting that the use of adrenaline would have been wrong in this case, and again the witness disagreed.⁵²
- [95] Eventually, towards the end of the cross-examination, it was put to Dr Vinen that “the side-effects of adrenaline, namely increased hypertension and tachycardia both meant that adrenaline was less suitable than salbutamol.” The witness disagreed, saying that, when used in appropriate amounts, adrenaline would have been fine and that salbutamol was not an appropriate drug in the circumstances of this patient.⁵³
- [96] Dr Vinen acknowledged that salbutamol had effect as a bronchodilator, but that the drug had a negative effect, its so called beta-1 effect, by taking blood away from the heart and brain and moving it to peripheral locations. As the judge noted,⁵⁴ Dr Vinen testified that for this reason, the use of salbutamol is thought to be associated with sudden cardiac death in patients who are acidotic and that Ms Masson was very likely acidotic.
- [97] The trial judge made these findings about Dr Vinen’s evidence:

“[69] I place no material weight on Dr Vinen’s evidence that salbutamol is thought to be associated with sudden cardiac death in patients who are acidotic. The real significance of Ms Masson’s likely acidosis in this case lay not in mitigating against the administration of salbutamol but in potentially

⁵¹ T3-58.

⁵² T3-60.

⁵³ T3-61.

⁵⁴ Reasons [68].

supporting the administration of adrenaline. As will be seen, it is the negative risk associated with adrenaline, rather than salbutamol which is of relevance here.

[70] In any event that evidence, which emerged from Dr Vinen in cross-examination, involved no identification of the published papers it was purportedly premised on, which is reason enough to place little weight on it. For the same reason I place little weight on Associate Professor Boots bare evidence, premised on uncited literature or emergency room studies, that while IV salbutamol and IV adrenaline are of equivalent utility, there is literature to support greater adverse reactions to adrenaline. That said, the risk of one of the reactions he mentioned – cardiac arrhythmia – was supported by other evidence.”

[98] The reasons given by his Honour for placing little weight on Dr Vinen’s evidence, as to the potential adverse risks of salbutamol in a patient who is acidotic, are open to criticism. His Honour did not refer to any evidence which contradicted that opinion. And his Honour’s reasoning in [69] is problematic, because a negative risk associated with salbutamol, if Dr Vinen’s opinion was to be accepted, was clearly relevant to the question of whether the exercise of reasonable care required the administration of adrenaline, rather than salbutamol.

Mr Kenneally

[99] Mr Kenneally qualified as an ambulance officer in 1988 and as a mobile intensive care paramedic in 1993. He worked as a team manager in intensive care and advanced life support paramedic teams from 2000, and, at the time of the trial, he lectured in paramedicine at Victoria University and in medical and traumatic emergencies for the Royal Australian College of General Practitioners.⁵⁵ Between 2009 and 2012, he was the Clinical Effectiveness Manager at Ambulance Victoria, overseeing the content of clinical practice guidelines and clinical work instructions. His evidence was given by a report and oral evidence when cross-examined.

[100] In his report, Mr Kenneally said that Ms Masson was in extremis when the ambulance officers arrived. He said that by following the CPM, more specifically the flowchart, the ambulance officers correctly provided intermittent positive pressure ventilation therapy. He wrote: “this should have then prompted [them] following the remainder of the 2-7 Dyspnoea: Asthma guideline. They then either underestimated her illness severity or made an error of guideline interpretation since they subsequently initiated the incorrect pharmacotherapy.”

[101] Mr Kenneally wrote that salbutamol “is a well-regarded bronchodilator drug with similar bronchiole actions during asthma attacks as adrenaline.” But he said that the CPM required adrenaline to be preferred over salbutamol “for this critical patient presentation.”

[102] In cross-examination, it became clear that Mr Kenneally’s opinion was not limited to the application of the CPM. He explained that adrenaline has other beneficial effects, which salbutamol does not.⁵⁶

⁵⁵ Reasons [45](iv).

⁵⁶ T4-70.

[103] He rejected the suggestion that adrenaline could have the effect of increasing the patient's blood pressure and pulse rate. His evidence in that respect was as follows:

“A usual action of adrenaline with alpha effect is that it would put up her blood pressure and her pulse rate?---Again, in the context of why her pulse rate and her blood pressure are high. Looking at it in 2002, there was probably less information available. Looking at it from now, there probably isn't anyone around who considers that to be a risk. You – her blood pressure and her heart rate will probably not go up with adrenaline. They'll probably come down, because you will increase the amount of air getting into her lungs.

All right?---So you will fix the reason – the reason her vital signs are so markedly disturbed is her body is already surging with her own adrenaline.

Yep?---Okay. She's trying to fix her own problem, which she has no hope of doing, so we supplement that with a significantly increased amount of drug.

All right?---And that, in fact, corrects the reason that all those numbers are up. So it's not unreasonable to think that her vital signs will actually go the complete opposite direction to what the textbook says. That's what happens if I give it to someone just sitting here, with nothing else go on. Yes, things will go up. If I give it to you when you're in extremis and fix your problem, they will come back to normal. And we now know that. We've been doing that for years. It's - - -

Sure?---No one ever has a problem with adrenaline in asthma.

Well, they – the pulse rate and blood pressure weren't very elevated?---Well, they were up a little bit for her. I wouldn't call them, you know, alarming, but they were up a little bit.

Yep?---They were about where you'd expect to find someone whose body knows it's near death.

As distressed as that?---Yeah, it's – her body was sending her every message, and I think they picked that up. They knew that, that her body was sending every message that “I'm in crisis.”⁵⁷

[104] At a later stage, he was asked whether the use of adrenaline might cause a possible arrhythmia, to which he answered that “on paper, that's an obvious concern that you would always have in your mind.” But he said that “if you stayed within the required drug doses, time intervals, drug route ... you are generally in an area where you shouldn't cause those problems.” He added that intravenous salbutamol will almost always cause a racing heart, so that it was not without its own side effects.⁵⁸

[105] However, he agreed with the suggestion that many people in Mr Peters' position would have used salbutamol because the “two [drugs] have been fighting each other for that pole position.”⁵⁹

⁵⁷ T4-71–72.

⁵⁸ T4-79.

⁵⁹ T4-72.

Mr Hucker

- [106] The trial judge discussed Mr Kenneally's evidence at the same time as he discussed the evidence of Mr Hucker, an expert paramedic called in the respondent's case. Mr Hucker disagreed with Mr Kenneally by saying that the CPM provided a flexibility to ambulance officers and that salbutamol was preferable to adrenaline as the patient had palpable pulses, a tachycardia and high blood pressure.
- [107] Mr Hucker said that the flowchart in the CPM was followed in this case. The basis (or otherwise) for that statement was revealed by the cross-examination of Mr Hucker.
- [108] The cross-examiner suggested that one of the conditions in the top diamond in the flowchart signalled treatment as set out in the document for a case of "imminent arrest". Mr Hucker said that it depended upon "how imminent her arrest is" and that there was a problem with the word "imminent", "because in some cases patients are imminent as in they're going to arrest right now – as in moments. Or they may well arrest in a couple of minutes. Sometimes we just don't know."
- [109] Mr Hucker's difficulty with the description of "imminent arrest" was curious because not only was his current position within the QAS one where he had responsibility for the standard of care provided by QAS paramedics, "by supervising a small team of Executive Managers who develop QAS standards of care as prescribed in the [CPM]", but he had also been involved in preparing the iteration of the CPM relevant in this case, by "providing clinical advice, proof reading and participating in committee functions to approve content."⁶⁰
- [110] A little further on, Mr Hucker agreed that it was not clear that this patient was in "imminent arrest" but that he would "accept it's okay to take the right-hand turn and move out on the yes tree."⁶¹ He went on to say that that was only an option which the ambulance officers could have taken and alternatively, they could have "moved down" to the second diamond,⁶² because this patient has one of the conditions within the first diamond. A little further on, he said that because this patient did not have bradycardia, the case "conflicts with that first diamond".⁶³
- [111] His explanation continued:⁶⁴
- "This is the problem of guidelines ... that trying to build a guideline to fit every patient presentation is near impossible. So what we try and do is build guidelines that will capture the sickest patient first and give us some guidelines on how we might treat them and then it cascades down. Now in this case [Ms Masson] is hovering between the top two diamonds in her presentation."
- [112] Clearly Mr Hucker's view that the administration of salbutamol was a proper course was affected by his non-acceptance of the fact, as the trial judge found it to be, that this was a case of imminent arrest. It must be accepted that, in some cases, it would be a difficult task for an ambulance officer to assess whether it was such a case. But apart from Mr Hucker, ultimately none of the expert witnesses seem to doubt that this was a case where cardiac arrest was imminent, as was death.

⁶⁰ His report p 3 [AR 556].

⁶¹ T8-9.

⁶² T8-10.

⁶³ T8-10.

⁶⁴ T8-10–11.

[113] I will return to the question of whether the treatment did conform with the CPM.

Professor Brown

[114] Professor Brown is a specialist for the Department of Emergency Medicine in the Royal Brisbane and Women’s Hospital and a professor in the field of anaesthesiology in critical care at The University of Queensland.⁶⁵ His evidence was given by three reports and oral evidence in cross-examination.

[115] In his first report, he did not accept that Ms Masson was in the category of “imminent arrest”, because she did not have all of the conditions within the first diamond in the flowchart. He said that it was correct to apply adrenaline only when the patient became bradycardic. He wrote that there was no medical evidence published anywhere in the world showing intravenous adrenaline as having any “absolute or relative beneficial outcome effects over and above nebulised or intravenous salbutamol in severe or critical asthma.”

[116] His second report need not be discussed. In his third report, he again repeated his evidence that there was no published medical literature demonstrating the superior efficacy of adrenaline in acute severe asthma, from which he said that it was “thus not possible to say that any of those outcomes would, or could have been avoided had adrenaline been given.”

[117] In oral evidence, he agreed that there are effects of salbutamol, including an increase of heart rate, although these are minimal. He said the effects from adrenaline are “a tremendous tachycardia, with risk of that tachycardia turning into an abnormal rhythm ... which is a cause of cardiac arrest, hence the dangers of adrenaline”.⁶⁶

[118] He said that as at 22:58, with critical asthma such as this, Ms Masson could have had a cardiac arrest “at any moment”.⁶⁷ He said that:⁶⁸

“You don’t give adrenaline to somebody who has got a rapid pulse and a high blood pressure, because it is a dangerous drug that will cause, in the face of hypoxia, a dangerous arrhythmia such as a ventricular tachycardia or ventricular fibrillation. And that’s why the safety of adrenaline is difficult, and you wouldn’t use [it] when somebody still has a perfusing rhythm...[t]hat’s why salbutamol is given.”

[119] However, in his oral evidence, he agreed that when she was first treated, Ms Masson was a patient within the first diamond in the flowchart.

[120] The judge made these general observations about Professor Brown’s evidence:⁶⁹

“Professor Brown’s reports contained unusually and unnecessarily strident criticisms of the content of the reports of some of the plaintiff’s expert reports, for example, labelling some content “factually, morally and ethically wrong and misleading” and having

⁶⁵ Reasons [46](i).

⁶⁶ T6-31.

⁶⁷ T6-75.

⁶⁸ T6-75, as the judge recorded in the Reasons at [83].

⁶⁹ Reasons [46](i).

“absolutely no merit in terms of veracity or reliability”. He even went so far as to assert violations of the expert witness code of conduct. The stridency of his criticism raised a concern he had unwittingly become an advocate for the defendant’s cause but that concern was allayed by his apparent professionalism in the witness box. His strident criticisms more likely resulted from misunderstanding the distinction, discussed below, between the law’s interest in accepted clinical practice regarding the administration of adrenalin and the evidentiary support justifying that practice.”

Associate Professor Boots

- [121] Associate Professor Boots is an intensive care specialist and thoracic physician. He is an Associate Professor at The University of Queensland and a Deputy Director of the Department of Intensive Care at Royal Brisbane Hospital.⁷⁰ He gave evidence in the form of three reports and by oral evidence under cross-examination.
- [122] In his first report, Associate Professor Boots said that the use of intravenous salbutamol was an appropriate therapy as an alternative to adrenaline, where cardiac output was maintained and there was no clear benefit of adrenaline over salbutamol. He observed, however, that the quantity of salbutamol which was administered “seems very large”, so much so that he thought that the record of 2 mg might have been a misstatement of 0.2 mg.
- [123] In his second report, he said that “certainly adrenaline is a reasonable but not the only possible therapy.” He added that from his review of the relevant literature, the two drugs are “at least equivalent” and that “indeed there is literature to support greater adverse reactions with adrenaline”. As I have said, the judge placed little weight on that evidence of the content of the literature.
- [124] A subsequent report was to the same effect.
- [125] In cross-examination, he said that the various treatments shown opposite the arrows in the flowchart were not mutually exclusive of each other because often such treatments would be given simultaneously.⁷¹ At a later point, he said that there was “no argument that [adrenaline] is an appropriate drug to use.”
- [126] Associate Professor Boots said that the use of adrenaline could have a negative effect, even in the case of a patient for whom a cardiac arrest is imminent. The judge described the effect of his evidence that prior to a cardiac arrest, where the patient is hypoxic, adrenaline “can make it quite worse by stunning the heart into all manner of funny rhythms”.⁷² But as the judge noted,⁷³ Associate Professor Boots did say that there was a preference for the use of adrenaline initially when there is a cardiac arrest (or if there is anaphylaxis).

Associate Professor Ramin

- [127] Associate Professor Ramin is a specialist emergency physician. He is the General Manager of Health Services and Medical Director, Aeromedical and Critical Care

⁷⁰ Reasons [46].

⁷¹ T7-13.

⁷² T7-21, as the judge recorded in the Reasons at [86].

⁷³ Reasons [50].

Services in the Royal Flying Doctor Service Queensland. His evidence was contained in two reports and oral evidence under cross-examination.

- [128] In his first report, he said that the choice of salbutamol was appropriate, because “there is no evidence to support the use of one drug over another in this clinical setting when there is still evidence of cardiac output” and that “neither is there conclusive evidence that either alters outcome[s].”⁷⁴ Throughout his reports he expressed the opinion that there was no conclusive evidence for the use of one drug over the other, although “theoretical arguments could be mounted for the use of either.”⁷⁵
- [129] In cross-examination, Associate Professor Ramin accepted that there would be “emergency physicians that would consider using and would use adrenaline” in cases of “severe pre-arrest asthma”.⁷⁶ He said that adrenaline can increase the heart rate which, depending on the context, may be a benefit or a negative.⁷⁷
- [130] He agreed that respiratory arrest will eventually lead to cardiac arrest potentially at any time and that Ms Masson was at a high risk of progression to cardiac arrest potentially within seconds.⁷⁸

The trial judge’s findings about the expert evidence

- [131] The trial judge discussed the expert evidence, first by reference to a question of whether adrenaline was ordinarily the preferred drug to administer to asthmatics in extremis, at the time of this incident in 2002. His Honour said that it was obvious that the practice in the medical profession traditionally regarded adrenaline as the ordinarily preferred drug to administer to asthmatics in extremis, but that there had been a shift in the extent of that preference.⁷⁹ Speaking of the present day, the judge said that there was now a “credible body of medical practitioners who regard salbutamol as an at least equally preferable drug to administer to asthmatics in extremis.”⁸⁰ His Honour said that “while there were doubtless credible views in 2002 favouring the equivalent utility of salbutamol for asthmatics in extremis, it may reasonably be inferred from the whole of the expert evidence that the practising medical profession’s traditional view in favour of ordinarily administering adrenaline to asthmatics in extremis was then likely a predominant view in the profession.”⁸¹ His Honour added that the “traditional view would not have precluded the administration of salbutamol in preference to adrenaline if that was medically appropriate having regard to the discrete aspects of the patient’s condition.”⁸² At that point, his Honour foreshadowed his finding, later in the Reasons, that there were aspects of Ms Masson’s condition, namely her high heart rate and blood pressure, which mitigated against the administration of adrenaline.⁸³
- [132] The judge then addressed another question, namely whether Ms Masson’s condition rendered salbutamol a preferred or equally acceptable option to adrenaline. After an

⁷⁴ AR 543.

⁷⁵ AR 548.

⁷⁶ T7-43, as the judge recorded in the Reasons at [54].

⁷⁷ T7-44, as the judge recorded in the Reasons at [84].

⁷⁸ T7-40, as the judge recorded in the Reasons at [65].

⁷⁹ Reasons [55].

⁸⁰ Ibid.

⁸¹ Reasons [56].

⁸² Reasons [57].

⁸³ Reasons [58].

extensive discussion of the evidence of the experts his Honour, whilst not directly answering that question, made these findings:

[90] At the time of initial treatment Ms Masson was not known to be in cardiac arrest or suffering an anaphylactic reaction, so it was not inevitable that adrenaline should have been administered. Nor was she suffering from conditions known to mitigate against the utility of salbutamol, such as bradycardia, decreased perfusion and decreased cardiac output.

[91] Ms Masson was however in extremis, which meant that adrenaline would ordinarily have been the preferred drug to administer, subject to her discrete conditions. Of those conditions her cyanosis and likely acidosis were conditions reinforcing the extremely dire state she was in and tending to confirm the appropriateness of administering adrenaline. On the other hand, her high heart rate and blood pressure were conditions founding a legitimate concern that the administration of adrenaline might worsen her state by plunging her into a dangerous arrhythmia or causing her heart to stop – that is, that it would heighten the risk of death.

[92] That concern provided a logical basis to prefer the administration of salbutamol and, if Ms Masson's condition did not improve, or if it worsened, revert to considering the administration of adrenaline. That course carried risks, particularly that salbutamol would not improve her condition and hypoxia may continue with irreversible results. Reasonable minds may differ as to whether those risks were outweighed by the above risks associated with administering adrenaline to an asthmatic in extremis with high heart rate and blood pressure.

[93] I conclude that there would have existed a responsible body of opinion in the medical profession in support of the view that Ms Masson's high heart rate and high blood pressure, in the context of her overall condition, provided a medically sound basis to prefer the administration of salbutamol to the administration of adrenaline at the time of initial treatment.

[94] This conclusion heralds obvious difficulty for the plaintiff's case.”

[133] Some of the reasoning in [91] and [92], if taken alone, would indicate a preference for the evidence of Professor Brown, which was that the potential side effects from adrenaline meant that it should not have been used, given the patient's high heart rate and blood pressure. But the last sentence of [92] and [93] indicate that the judge had no preference for the evidence over that evidence of the experts called in the appellant's case. His Honour did not specifically find that the risks from the use of adrenaline were such as to make the use of salbutamol a reasonable course. Rather, he found that there was a responsible body of opinion in the medical profession in support of that view. And it also appears that his Honour considered that there was a responsible body of opinion which was against that view.

[134] After discussing those two questions the judge discussed a third question, which was whether the non-administration of adrenaline at the time of the initial treatment

was contrary to the CPM. The judge's reasoning in that respect, including his consideration of the evidence of Mr Peters, has been discussed. In effect, his Honour answered the question in the negative, on the basis that the CPM did not require the administration of adrenaline, but only the consideration of whether it should be administered, and that Mr Peters did consider the matter.

The judge's conclusions about negligence

[135] Having addressed those three questions, his Honour set out his conclusions on whether negligence had been proved in these terms:

“[150] The plaintiff's complaint of an alleged failure to administer proper, adequate and timely treatment was in substance a complaint that during the initial treatment there was a failure to administer adrenaline, contrary to the asthma guideline and or contrary to the standards of ordinary skilled ambulance officers.

[151] The asthma guideline did not require adrenaline to be administered. It prompted consideration of the administration of adrenaline. The administration of adrenaline was considered but rejected by reason of the concerning presence of tachycardia and hypertension. The presence of those conditions would have been regarded by a responsible body of opinion in the medical profession as supporting the view that Ms Masson's high heart rate and high blood pressure, in the context of her overall condition, provided a medically sound basis to prefer the administration of salbutamol to the administration of adrenaline at the time of initial treatment. Opting to administer salbutamol in preference to adrenaline in those circumstances was a reasonable response to the known risks.

[152] True it is, many doctors (perhaps less now than then) presented with Ms Masson's condition in a hospital setting may have elected to administer adrenaline. However, it is important to bear in mind ambulance officers are not medical practitioners who are specialists in emergency medicine.

[153] The urgent reality presenting itself on a suburban front lawn at night was that Ms Masson was certainly going to die if ambulance officers did not administer immediate treatment. In determining the pharmacological component of the broader treatment being administered they were presented with the dilemma that the administration of the drug ordinarily favoured for administration to a patient in extremis would, because of Ms Masson's tachycardia and hypertension, carry a real risk of worsening her condition and hastening her death. As against this there was the option of administering a drug known to be effective for severe asthma which did not carry the same risk.

[154] In a different but similar hypothetical case if adrenaline was administered and the patient soon suffered cardiac arrest and

death, it can readily be imagined that the decision to administer adrenaline would in hindsight be characterised as having been too risky in light of the patient's particular condition. The reality is that this was a decision which could properly have gone either way in light of the competing risks.

[155] The treatment which was administered did not fall below the standard of care to be observed by ambulance officers and was not contrary to the QAS asthma guideline. No breach of the duty of care has been established and the claim must fail.”

The arguments

The appellant's arguments

[136] There were two outlines of argument which were filed for the appellant. The second was materially different from the first, but at the hearing the Court was told that both should be considered.

[137] In the first outline, it was argued that the trial judge erred by reasoning, in paragraphs [151]-[155], that Mr Peters was not negligent because the patient was treated in a way which accorded with “a responsible body of opinion in the medical profession”. In effect, it was argued there that the judge failed to consider whether reasonable care had been exercised, as distinct from whether there was a body of medical opinion which would have supported it.⁸⁴ It was argued that the trial judge gave no “real consideration” to the case of direct liability against QAS “for its failings as to the training and guidance of its officers.” In that respect, it was argued that the trial judge impermissibly reasoned that it would be reasonable to expect the approach of QAS, in the training and guidance of their officers, to be informed by widely accepted medical opinion.⁸⁵ And it was argued that the judge erred in the interpretation of the flowchart, by concluding that the words “consider adrenaline” permitted adrenaline not to be administered in a particular case.

[138] In the second outline, it was argued that the judge should have addressed two questions, namely:

- (1) was adrenaline the correct drug to give Ms Masson at the outset? and
- (2) if so, was it unreasonable for the QAS in 2002 to send Mr Peters into the field without knowing that adrenaline was the correct drug to give in these circumstances?

That second question, the argument continued, assumed that Mr Peters' failure to administer adrenaline at the outset was from his ignorance that it was the correct drug in the circumstances. Alternatively, it was said that if Mr Peters knew that adrenaline was the correct drug, then QAS was vicariously liable, instead of being directly liable.

[139] As to the first of those questions, namely whether adrenaline was the “correct drug”, the appellant's submission was that the trial judge effectively answered that question in finding that adrenaline was the drug which would have been effective, in the judge's reasoning on the question of causation.

⁸⁴ cf. *Rogers v Whitaker* (1992) 175 CLR 479 at 487.

⁸⁵ Reasons [59].

The respondent's arguments

- [140] For the respondent, it was submitted that the trial judge considered both the direct liability and vicarious liability cases. The two were closely related, in that each depended upon the factual proposition that adrenaline was the preferable drug to be administered to a patient for whom there was an imminent risk of cardiac arrest. Each was also affected by the risk of side effects from the use of adrenaline for a patient who was tachycardic and had high blood pressure. Just as it was reasonable for Mr Peters to consider that adrenaline should not be administered, it was reasonable for the QAS not to have instructed its officers that adrenaline had to be administered in such a case.
- [141] The respondent's argument in this Court accepted the correctness of the judge's interpretation of the CPM. In particular, it was submitted that the judge was correct to interpret the requirement to consider adrenaline, as his Honour did.
- [142] It is submitted that the judge's finding that Mr Peters did consider whether to administer adrenaline at the outset was a finding that should not be disturbed, coming as it did after the judge had been impressed by "the tone and manner" of Mr Peters' evidence.⁸⁶
- [143] It was submitted that the judge had not mistaken the question of whether a duty of care had been breached by confining himself to a consideration of whether there was a responsible body of professional opinion in support of the administration of salbutamol in the circumstances of this case. And it was submitted that there was a sound basis for the judge to infer that the training and guidance given by QAS to its officers was informed by widely-accepted medical opinion.
- [144] As to the appellant's second outline of argument, the respondent objected that this was the first time in the proceeding that the effect time of adrenaline, according to the CPM, was raised. It was submitted for the respondent that the judge did not find that the administration of adrenaline would have avoided Ms Masson's injury because of a quicker effect of adrenaline relative to salbutamol.
- [145] It was submitted that the appellant's argument confused the issues of breach and causation. The judge had accepted that, had adrenaline been applied from the outset, the injury to Ms Masson would have been avoided, but did so with the benefit of a knowledge of the facts and circumstances of previous incidents in which adrenaline had been successfully administered to her. On the question of breach, those facts and circumstances were unknown to the ambulance officers.

Consideration*The standard of care*

- [146] The trial judge said this about the standard of care to be expected of the ambulance officers, with which I respectfully agree:

"[29] [The pleadings] reflect the standard of care to be observed by a person with some special skill or competence, as ambulance officers have, namely, 'that of the ordinary skilled person exercising and professing to have that special skill' [*Rogers v*

⁸⁶ Reasons [146].

Whittaker (1992) 175 CLR 479, 487]. It is well established that standard is not determined solely or primarily by reference to the practice followed or supported by a responsible body of opinion in the relevant profession. Nonetheless, as was observed in *CGU Insurance Ltd v Porterhouse* (2008) 235 CLR 103, 122:

“Evidence of a particular practice or standard of conduct, whether laid down by a professional body or sanctioned by common usage, may be relevant to establishing a standard of care in a case of professional negligence...”

This heralds the significance of QAS guidelines and the common approach of skilled ambulance officers in respect of the administration of adrenaline for asthma.

- [30] Importantly the standard of care under consideration here is not as high as that expected of a medical practitioner or an emergency physician in the hospital setting. It is that expected of an ambulance officer, operating in the field, in an emergency.”

(Emphasis added.)

- [147] At the end of that passage, the trial judge cited the judgment of the New South Wales Court of Appeal in *Ambulance Service of New South Wales v Worley*,⁸⁷ where Basten JA (with whom Tobias and McColl JJA agreed) said:

“[29] Ambulance officers are not medical practitioners, let alone specialists in emergency medicine. Their training is by no means insignificant, but it does not equip them with the theoretical knowledge which would permit a fine evaluation of alternative treatments. In a case such as the present, their two functions were to stabilize the condition of a patient, so far as their skills and resources permitted, and to ensure his speedy transfer to an available hospital ...

- [30] Perhaps surprisingly, and not including the treating medical practitioners, each party at trial called five medical specialists, whose evidence was directed mainly to the question as to what was accepted medical and pharmacological practice in relation to the administration of adrenaline in 1998. Without objection, experts in emergency medicine discussed their own practices in well-equipped teaching hospitals, with far less attention being given to the position of ambulance officers and the nature and purpose of the protocols which governed their conduct.”

- [148] The difference between the care and skill to be expected of an ambulance officer and that to be expected from a specialist in emergency medicine is significant in a number of ways. The first is that, notwithstanding their training, ambulance officers cannot be expected to make the fine professional judgments which would require the education, training and experience of a medical specialist. That limitation is

⁸⁷ [2006] NSWCA 102.

recognised by the fact that ambulance officers are provided with the instructions and guidance of something such as the CPM. As the trial judge said in the above passage, the CPM (or as he called it, the QAS guidelines) was significant as evidence of a relevant standard of conduct.

- [149] Further, again because of the more limited education, training and experience of ambulance officers compared with medical specialists, it would not be consistent with the exercise of reasonable care and skill for an ambulance officer to depart from the guidance of the CPM. A substantial issue in this appeal is the scope of the discretion, provided by the flowchart, to “consider adrenaline”. The exercise of reasonable care required that such consideration actually occur, but consistently with the guidance provided by the CPM. A departure from that guidance, with the grave risk that the patient would not avoid serious injury or death, could not be easily justified upon the basis that the officer believed that there was a responsible body of medical opinion which supported that course. Unlike the medical specialist, the ambulance officer does not have the requisite competence to make their own professional judgment about the merits of competing views within a field of specialised medical practice.

Did the treatment conform with the CPM?

- [150] As the trial judge found, this was a case of imminent arrest as described in the flowchart. The ambulance officers, Mr Peters in particular, had to make an assessment of the symptoms and condition of the patient. However, upon the correct interpretation of the flowchart, this was a case within the diamond highest on the page: the patient’s GCS was less than 12 and she was at risk of an imminent arrest, more specifically a cardiac arrest. According to the CPM, the officers were to be guided by the treatments appearing in the section indicated by the arrow to the right of that diamond.
- [151] I have agreed with the trial judge that, in general, it was not every case within this category which required, consistently with the exercise of reasonable care by the ambulance officers, the administration of adrenaline. I have disagreed with the trial judge that Mr Peters did consider whether adrenaline should be administered, by weighing the risks from its use against the risks of salbutamol not being as effective in bronchodilation. To the extent that Mr Peters did avert to the use of adrenaline, he immediately rejected it, not because of a clinical judgment, but because he misunderstood the guideline by thinking that in no case was adrenaline to be given to a patient who was not bradycardic.
- [152] Mr Peters administered salbutamol in excess of the dosages prescribed by the Drug Data Sheet within the CPM. There were eight portions of 250 mcg, a total of 2 mg, administered over a 20 minute period. No more than 500 mcg should have been administered within 10 minutes and no more than 1 mg should have been administered after 20 minutes. Again according to the Drug Data Sheet, salbutamol had side effects which include tachycardia and tachyarrhythmias. Undoubtedly Mr Peters believed that these excessive dosages were required, because of the condition of the patient and the likelihood of death if proper breathing could not be quickly restored. His departure from the prescribed dosages of salbutamol was not permitted by the terms of the CPM. The evident explanation for that departure was his understanding of the urgency of the situation and his observation that the patient was not responding satisfactorily to the initial treatment.

- [153] The flowchart required the officer to “consider adrenaline”, not to “consider adrenaline or salbutamol”. In other words, the flowchart did not suggest salbutamol as an alternative to adrenaline. Nor did it suggest that salbutamol was as effective an agent in bronchodilation as adrenaline. The flowchart showed salbutamol as the drug to be “considered” only in the circumstances of a less serious case.
- [154] The Drug Data Sheet for adrenaline showed that the use of that drug was indicated where there was a bronchospasm “unresponsive to Salbutamol”. It prescribed dosages for a patient with “[a]sthma or severe bronchospasm with imminent arrest”, whereas the Drug Data Sheet for salbutamol did not refer to a case of asthma in that category. If Mr Peters had weighed up the use of one drug against the other, then consistently with the CPM he would have been wrong to think that one drug was as good as the other in effecting bronchodilation.
- [155] The Drug Data Sheet for adrenaline referred to adrenaline’s potential side effects of tachyarrhythmias and hypertension. But neither the Drug Data Sheet nor the flowchart said that, in a case of imminent arrest, adrenaline should not be used where the patient was tachycardic or had high blood pressure. In particular, under the heading “Contra-indications” in the Drug Data Sheet, a high pulse rate and high blood pressure were not mentioned. What was mentioned was a “[k]nown severe adverse reaction”.
- [156] In summary, Ms Masson was not treated in accordance with the CPM. The use of adrenaline was not considered as required by the flowchart. If it was considered at all, it was inconsistent with the CPM to decide to administer twice the permitted dosage of salbutamol in the hope that this would be as effective as the administration of adrenaline.

Mr Peters’ misunderstanding of the CPM

- [157] If the CPM was ambiguous, it might be suggested that Mr Peters was not negligent in misunderstanding it and proceeding as he did.
- [158] The meaning of the CPM was the subject of substantial debate at the trial. The trial judge was correct to observe that the CPM was not to be “analysed in the same manner that lawyers tend to analyse statutes and legal documents such as contracts”, instead of “as a document intended for use by ambulance officers”. It must also be recognised that a document which might seem clear with the benefit of the evidence, arguments and the analysis of the trial judge might not have been so clear to an ambulance officer in the field.
- [159] Nevertheless, in my view, the CPM was not relevantly ambiguous. Mr Peters’ understanding was that adrenaline was not even to be considered for a patient who was not bradycardic. It would have been remarkable if the CPM precluded the use of adrenaline where the heartrate was normal. Mr Peters’ conduct cannot be excused on the basis of a reasonable but mistaken interpretation of the CPM.

Was Mr Peters negligent in his treatment?

- [160] The trial judge was satisfied that, in 2002, “the practising medical profession traditionally regarded adrenaline as the ordinarily preferred drug to administer to

asthmatics in extremis.”⁸⁸ But, in the present day, his Honour said, whilst there was a “credible body of medical practitioners” who remained of that view, there was a similar body “who regard salbutamol as an at least equally preferable drug”.⁸⁹ Whilst there were “credible views in 2002 favouring the equivalent utility of salbutamol”,⁹⁰ there was not what his Honour described as a “credible body” of professional opinion to that effect. The correctness of those findings, as to the position in 2002, is supported by the terms of the CPM.

- [161] Yet ultimately, the judge held that the administration of salbutamol in this case could be justified because it accorded with “a responsible body of opinion in the medical profession”. His Honour found that although, in 2002, there was not a responsible body of opinion that salbutamol was equally effective as adrenaline, nevertheless there was a body of opinion supporting its use in preference to adrenaline where the patient had a high heartrate and high blood pressure. As I have said, an ambulance officer could not have been expected to know of the existence of competing bodies of medical opinion on that subject, and was not competent to make an assessment of the respective merits. Instead, the exercise of reasonable care required the ambulance officer to be guided by the CPM.
- [162] As the CPM made sufficiently clear, adrenaline was the preferred drug in order to achieve a fast and effective dilation of the bronchial passages, so as to avoid death or the permanent effects of the deprivation of oxygen to the brain. For an officer in the position of Mr Peters, the “consideration” of adrenaline should have proceeded upon that premise.
- [163] There were the risks of side effects from adrenaline. As several witnesses testified, and the CPM made clear, there were also risks of side effects from salbutamol, including tachycardia and tachyarrhythmias. The risks of side effects from the use of adrenaline had to be weighed against the risks of using an evidently inferior drug for bronchodilation. Had there been a body of medical opinion that adrenaline should not be used in a case such as this, and had Mr Peters been aware of it, and followed that opinion, where adrenaline was the indicated drug according to the CPM, that would have involved a failure to take reasonable care.
- [164] But further, in my respectful opinion, his Honour’s finding that there was a responsible body of opinion in the medical profession to support the administration of salbutamol to a patient with Ms Masson’s high heartrate and blood pressure was not supported by the evidence.
- [165] Each of the three medical practitioners who gave evidence in the respondent’s case subscribed to the view that salbutamol was an equally effective drug for bronchodilation. None of them said that, *upon the premise that adrenaline was the superior drug for the treatment of an asthmatic at immediate risk of cardiac failure and death*, that the risk from using an inferior drug was outweighed by the risk of side effects from the adrenaline.
- [166] The position might have been different had the doctors (such as Professor Fulde) who considered that adrenaline was the better drug for bronchodilation said that its side effects for a tachycardic patient could justify the use of salbutamol.

⁸⁸ Reasons [55].

⁸⁹ Ibid.

⁹⁰ Reasons [56].

- [167] Consequently, there was no basis, consistent with the exercise of reasonable care and skill by Mr Peters as an ambulance officer, for him to use what he ought to have understood was a less effective drug for a patient in this critical condition. The existence of potential side effects, from the perspective of an ambulance officer instructed by the CPM, was not a justification for instead using salbutamol.
- [168] It follows that the trial judge ought to have held that Mr Peters was negligent in not administering adrenaline at the outset. The respondent does not challenge the judge's finding that had that been done, the injury to Ms Masson would have been avoided. The respondent was vicariously liable for Mr Peters' negligence.

Conclusion and Orders

- [169] I would order as follows:
1. Appeal allowed.
 2. Set aside the orders made on 23 July and 8 August 2018.
 3. Within 28 days of this judgment the parties to file and exchange written submissions, not to exceed eight pages, as to the amount for which the appellant should be given judgment and as to the costs of the appeal and in the trial division.
- [170] **BODDICE J:** I agree with McMurdo JA.