D'Conceicao Jeanie Doris (administratrix of the estate of Milakov Steven, deceased) *v* Tong Ming Chuan
[2011] SGHC 193

Case Number : Suit No 270 of 2010

Decision Date : 22 August 2011

Tribunal/Court : High Court

Coram : Tay Yong Kwang J

Counsel Name(s) : Mr Palaniappan S (Straits Law Practice) for the plaintiff; Mr Edwin Tong, Ms Mak Wei Munn and Mr Tham Hsu Hsien (Allen& Gledhill) for the defendant.

Parties : D'Conceicao Jeanie Doris (administratrix of the estate of Milakov Steven, deceased) — Tong Ming Chuan

Tort – Negligence – Medical Negligence

22 August 2011 Judgment reserved.

Tay Yong Kwang J:

Introduction

1 The plaintiff is the administratrix of the estate of the late Milakov Steven ("MS"). Dr Tong Ming Chuan ("Dr Tong") is a cardiothoracic surgeon who performed a redo coronary artery bypass graft surgery ("the redo-CABG") on MS on 12 March 2007. On 23 April 2007, 6 weeks after the redo-CABG, MS passed away from post-operative complications. The plaintiff brought a claim in tort and contract against Dr Tong, alleging that Dr Tong was negligent and/or in breach of contract in relation to the medical advice, care and treatment that he rendered to MS between 9 March 2007 and 23 April 2007.

2 The trial before me was confined to the issue of liability.

The parties

3 The plaintiff and MS were married in 1989. Letters of Administration of the estate of MS were granted to the plaintiff on 22 March 2010 and the grant was extracted on 15 April 2010. The plaintiff brought this action against Dr Tong for damages for the benefit of the dependants of MS under ss 20 and 21 of the Civil Law Act (Cap 43, 1999 Rev Ed) ("the Civil Law Act") and for the benefit of the estate of MS under s 10 of the Civil Law Act. The dependants of MS are:

i. The plaintiff, the lawful widow and next-of-kin, born on 19 July 1951 and presently 60 years of age;

ii. Stacey Anne Moody, the lawful daughter and next-of-kin, a citizen of USA, a married woman, born on 24 November 1972 and presently 39 years old; and

iii. Tim Milakov, the lawful son and next-of-kin, citizen of USA, a married man, born on 10 April

1976 and presently 35 years old.

4 Dr Tong is a Consultant Cardiothoracic Surgeon in private practice with over 28 years of experience in cardiothoracic surgery. He practises at a clinic in Mount Elizabeth Medical Centre. MS was referred to and first saw Dr Tong on 9 March 2007. Dr Tong performed the redo-CABG on MS on 12 March 2007. From 12 March 2007 to 23 April 2007 ("the post-surgery period"), MS was cared for in the Coronary Care Unit at Mount Elizabeth Hospital. Dr Tong was MS's primary physician during the post-surgery period.

5 MS was 65 years of age at the time of his death. He was an American citizen and held Permanent Residence status in Singapore. Prior to his death, MS was engaged on a contractual basis by M/s Chevron Inc, a multinational company based in the United States of America ("USA"), as a consultant on matters relating to communication skills, brand management and public relations. He was also an author of a number of books and articles. His average monthly earnings were around $16,250 per month when he passed away. MS had a history of borderline diabetes and hypertension. Notwithstanding these conditions, before suffering his first major adverse cardiac event ("MACE") on 17 January 2007, MS had been in good health. The plaintiff testified that MS led an active lifestyle and was accustomed to exercising five or six times a week regularly.

The background

6 For the purposes of determining liability, it is necessary to understand the events leading up to this claim. The key medical terms will be defined where necessary to facilitate understanding. The facts and definitions are undisputed unless the contrary is indicated.

The first MACE suffered by MS and the treatment he received at St Joseph Medical Centre, Houston ("SJMC")

7 On 17 January 2007, when MS was in Houston, USA, he experienced left-side back tightness accompanied by some nausea while doing his normal routine physical exercise. This exercise routine comprised of a walk which usually lasted about 45 minutes to an hour. After MS felt unwell during the course of the walk, the plaintiff, who was walking with him, accompanied him home to rest. As MS continued to feel unwell, the plaintiff brought him to SJMC on the same day to seek medical attention. MS was diagnosed as suffering from ischaemia (insufficient blood supply to the heart muscles), [note: 1] and angina pectoris (chest pain, a symptom of ischaemia). These conditions are distinct from an acute myocardial infarction ("AMI") (more commonly known as a heart attack). MS did not suffer an AMI on 17 January 2007. This was the first time he suffered a MACE.

8 MS underwent a coronary angiography on 18 January 2007. A coronary angiography is a procedure to visualise the coronary arteries. To conduct an angiography, the catheter is inserted into a large artery in the groin or the wrist (in MS's case, the femoral artery was selected), [note: 2] then advanced to the heart and positioned at the mouths of the coronary arteries before injection is performed. To see the coronary arteries, a special dye or contrast medium is injected through the catheter. The dye will "opacify" the vessels and thus makes them visible on the angiogram. Coronary angiography may be said to be an invasive procedure. This procedure is carried out to determine whether there is any significant narrowing or blockage ("stenosis") in the coronary arteries. Stenosis of the vessels may be caused by coronary artery disease. Where there is stenosis, the blood flow to the heart muscles becomes restricted, which in turn may cause ischaemia, angina pectoris and AMI. [note: 3]

9 The coronary angiography revealed that MS had coronary artery disease and that the following blood vessels had become stenosed:

(i) the left main coronary artery ("LMCA");

(ii) the left anterior descending arterial system ("LAD");

(iii) the circumflex artery ("Cx"); and

(iv) the right coronary arterial system ("RCA").

10 MS was advised by his doctors in SJMC to undergo a coronary artery bypass graft surgery ("CABG"). A CABG is a surgery which allows for coronary revascularisation. Revascularisation refers to intervention to restore or improve blood supply to the heart. If coronary revascularisation is desired, there are two procedures that may be performed, namely, a CABG or a percutaneous coronary intervention ("PCI"). The suitability of each procedure is dependent on the particular patient. The aim of a CABG is to insert one or more grafts to the coronary arteries to bypass the stenosed areas. [note: 4] This revascularisation will help to ensure that an adequate supply of blood continues to reach the heart muscles. This is important as oxygen and nutrients, which are vital for muscle survival, are transported through the blood. To perform a CABG, the patient is first put under general anaesthesia. The surgeon then makes an incision down the middle of the patient's chest and saws through his breastbone. The blood vessels which are to be used as grafts will be harvested. The two types of vessels commonly used as grafts are saphenous veins and internal mammary arteries. The heart will then be stopped, and the patient placed on a cardiopulmonary bypass machine. A cross clamp will be placed across the aorta to prevent blood returning to the heart and a cardioplegia solution administered to prevent cell death within the heart. The grafts will then be inserted. Following this, the patient will be removed from the bypass machine. To complete the surgery, the surgeon will stop any bleeding, wire the breastbone together, and close the incision. As can be seen from this brief description of a CABG, the surgery is a major one.

11 On his doctors' advice, MS underwent a triple CABG on 19 January 2007 ("the initial CABG"). The initial CABG performed at SJMC involved the insertion of three grafts:

(i) A saphenous vein graft ("SVG") from the aorta to a marginal branch of the Cx ("Graft 1"). There was a dispute at trial about the position of Graft 1, but both sides accepted that this was inconsequential.

(ii) A SVG from the aorta to another marginal branch of the Cx ("Graft 2").

(iii) A left internal mammary artery ("LIMA") graft to the LAD ("the LIMA-LAD graft").

Recovery after the initial CABG

12 Following the initial CABG, MS made good recovery, and returned to Singapore in February 2007. Upon his return to Singapore, MS consulted his regular general practitioner, one Dr Michael Chua, as his doctors in SJMC had suggested routine medical reviews. Dr Michael Chua in turn opined that MS would benefit from regular check-ups by a cardiologist and recommended one Dr Christopher Chew, an interventional cardiologist at Mount Elizabeth Medical Centre.

13 On 23 February 2007, MS consulted Dr Christopher Chew at his clinic. Dr Christopher Chew conducted some tests on MS. MS performed within the acceptable range of results for the tests. Dr Christopher Chew thus advised MS that he was recovering well and that he could continue with his usual exercises and lifestyle. Even so, MS adopted a more sedentary lifestyle and rested at home as he was on medical leave after the initial CABG.

The second MACE suffered by MS and the treatment he received at Mount Elizabeth Hospital ("MEH")

14 At around 5.00am on 9 March 2007, MS experienced some chest pain. He presented himself at the Accident and Emergency Department of MEH for a consultation at around 6.00am and requested to see Dr Christopher Chew. It is not disputed that on 9 March 2007, MS suffered an AMI. This was the first AMI that MS suffered.

15 Dr Christopher Chew examined MS and performed a coronary angiography on him at or about 8.45am on 9 March 2007. It is not disputed that the angiogram suggested that Graft 1 and Graft 2 were completely occluded. The Cardiac Catheterization Report stated that a "total block" had occurred in Graft 1 and Graft 2. [note: 5] The occlusion would mean that no blood could flow through those grafts, thus cutting off the supply of oxygen and nutrients to areas of heart muscle downstream of the grafts. Dr Christopher Chew opined that the AMI had been caused by the occlusion of Graft 1 and Graft 2. With regard to the LIMA-LAD graft, there was a substantial dispute at trial as to its patency. The significance of this dispute will be seen in the discussion on whether the redo-CABG was an indicated and/or appropriate treatment.

16 Dr Christopher Chew then recommended that MS obtain a surgical opinion from a cardiothoracic surgeon. MS was agreeable to this and Dr Christopher Chew referred him to Dr Tong. At or about 12.00 noon on 9 March 2007, Dr Tong examined MS. It is clear that the option of a redo-CABG was proposed by Dr Tong to MS at this first meeting. The sufficiency of the advice given by Dr Tong to MS on the risks of the redo-CABG and on alternative treatment options is disputed.

17 On 12 March 2007, Dr Tong carried out the redo-CABG on MS. This was some 7 weeks after the initial CABG conducted at SJMC. A redo-CABG is essentially similar to an initial CABG. It is, however, a much riskier surgery, particularly when the redo-CABG is performed within a short period of time from the initial surgery. The fact that MS's redo-CABG involved a higher degree of risk than his initial CABG was not disputed by Dr Tong. After an initial CABG, the heart takes some time to recover from the operation. There would be scarring of the tissues in the chest, with adhesions between the heart and pericardium and between the pericardium and the breastbone. The closer the proximity in time to the initial CABG, the more highly vascularised the scar tissue and incision of such tissue would result in a high degree of blood loss. Therefore, a redo-CABG performed shortly after an initial CABG would involve heavier blood loss than the initial CABG. A surgeon doing a redo-CABG would need to proceed slowly, cauterising the vessels to minimise blood loss and would also need to proceed cautiously to avoid severing grafts from the initial CABG that remained patent. This would result in an increased entry time into the chest which would cause the redo-CABG to take more time to complete than an

initial CABG.

18 MS's redo-CABG started at 9.00am and ended at 6.55pm on 12 March 2007, *ie*, the surgery lasted close to 10 hours. During the surgery, MS was placed on the cardiopulmonary bypass for 333 minutes, and the cross clamp time was 140 minutes. Three new grafts were inserted during the surgery: two SVG grafts to the marginal branches of the Cx and a right internal mammary artery ("RIMA") graft to the diagonal branch of the LAD. Following this, the bleeding had to be controlled before the surgery was completed. The usual methods of controlling bleeding, *ie*, an infusion of platelets and fresh frozen plasma were administered to MS. However, these failed to stop the bleeding, and 2.4 mg of Activated Factor VII (a clotting agent) was then administered. This achieved haemostasis (the stopping of bleeding). MS's chest was then closed and the surgery completed.

19 After the surgery, MS was admitted to the Coronary Care Unit at MEH. While in the Coronary Care Unit during the post-surgery period, MS developed post-operative complications including infection and sepsis which seriously compromised his health. On 23 April 2007, 42 days after the redo-CABG, MS passed away from multi-organ failure.

The plaintiff's claim

20 The plaintiff particularised her claim in the tort of negligence comprehensively under 17 sub-paragraphs. Broadly, her claim fall under three headings.

21 First, the plaintiff claimed that Dr Tong was negligent in recommending that MS undergo the redo-CABG. This claim centres on whether the redo-CABG was an indicated and/or appropriate treatment for MS. It is a distinct and logically prior claim to the second group of issues on the duty to advise (at [22]), as the patient should only be advised about indicated and/or appropriate treatments. The plaintiff claimed that the urgent redo-CABG in this case was not an appropriate treatment for the following reasons:

(i) Dr Tong failed to adequately consider the proximity in time between MS's initial CABG and the proposed redo-CABG;

(ii) Dr Tong failed to adequately consider MS's improving health and stable condition between 9 and 11 March 2007;

(iii) Dr Tong failed to carry out further tests to assess the need for an urgent redo-CABG; and

(iv) The less risky alternative treatment options of optimal medical treatment ("OMT") and PCI were available.

22 Second, the plaintiff claimed that Dr Tong failed in his duty of care to advise MS on the redo-CABG for the following reasons:

(i) Dr Tong failed to provide sufficient information regarding the mortality rate for redo-CABGs and had underestimated the risk of the surgery to be at 3%;

(ii) Dr Tong failed to provide sufficient information to MS about the morbidity risks associated with redo-CABGs;

(iii) Dr Tong failed to inform MS about the risks associated with the *particular* redo-CABG he was about to undergo, given that it was to be carried out only some 7 weeks after the initial CABG and only three days after his AMI;

(iv) Dr Tong failed to inform MS of the option to postpone the redo-CABG; and

(v) Dr Tong failed to inform MS of the alternative treatment options of OMT and PCI.

23 Third, the plaintiff claimed that Dr Tong was negligent in the actual performance of the redo-CABG for the following reasons:

(i) Dr Tong failed to use retrograde cardioplegia to protect MS's heart;

(ii) The surgery was prolonged with a cardiopulmonary bypass time of 333 minutes;

(iii) The RIMA should not have been harvested and grafted onto the "diagonal system" of the LAD; and

(iv) Activated Factor VII should not have been used.

24 The plaintiff also made corresponding parallel claims based on the contractual duties which Dr Tong owed to MS.

25 It is noted that the plaintiff made no claim with regard to Dr Tong's post-operative care of MS.

The defence

26 Dr Tong denied the plaintiff's claims. I summarise the salient points of the defence here. Where possible, I have enumerated the defence to correspond to the plaintiff's claim.

27 First, Dr Tong averred that a redo-CABG was indicated and appropriate for MS given his evolving infarction, poor coronary condition and the complete occlusion of Graft 1 and Graft 2. He further averred that PCI was not a viable option for MS. MS's condition and prognosis without the redo-CABG was very poor and it was more likely than not that he would die within three years without the redo-CABG.

28 Second, regarding his advice to MS, Dr Tong stated he had fulfilled his duty of care in advising MS for the following reasons:

(i) He had "warned MS that the mortality risk of a redo-CABG was about 3% (*ie*, higher than an initial CABG) and that there was also a small risk of stroke". Dr Tong further averred that based on his knowledge and experience, it was reasonable to advise of a 3% mortality risk. (It must be noted that Dr Tong's case at trial on this point diverged from his pleaded case);

(ii) He had provided MS with sufficient information about the morbidity risks associated with the redo-CABG;

(iii) He had informed MS on 10 March 2007 of the option to postpone the redo-CABG as MS's angina pectoris had resolved because of medical treatment; and

(iv) He had informed MS of the alternative treatment option of OMT but also told MS that MS's prognosis would be poor under that option. Dr Tong advised that given MS's poor coronary condition, MS could proceed with the redo-CABG or risk further angina pectoris and/or another AMI (which might lead to death).

29 In addition, Dr Tong asserted that MS had discussed the redo-CABG with Dr Christopher Chew and Dr Suelyn Chew (the anaesthetist involved in MS's redo-CABG) in separate consultations. This was on top of MS's discussions with Dr Tong himself.

30 Third, Dr Tong explained that the redo-CABG was not carried out negligently for the following reasons:

(i) Adequate steps had been taken to protect the functionality of MS's heart during surgery, including the use of antegrade blood cardioplegia;

(ii) The surgery was long as it was complicated and technically difficult. The sternum was densely adhered to the anterior surface of the heart, requiring extensive time to free it. The coronary bypass time (333 minutes) was long because the distal LAD was very heavily calcified and the Cx was "stony hard" and could not be grafted; and

(iii) Activated Factor VII was required to stop the excessive bleeding.

Issues

31 Much of the time at trial was spent cross-examining the expert witnesses over the first thrust of the plaintiff's claim on whether the redo-CABG should even have been recommended to MS as an option. However, the plaintiff's written submissions dealt largely only with the second thrust of her claim, that is, whether Dr Tong was negligent in advising MS regarding the redo-CABG. The plaintiff did not strenuously pursue the third thrust of her claim (concerning the negligent conduct of the redo-CABG) during trial or in her written submissions.

32 Nevertheless, the three issues to be decided are as follows:

(a) first, whether Dr Tong breached the tortious and contractual duties of care he owed to MS in recommending that MS undergo the redo-CABG;

(b) second, whether Dr Tong breached the tortious and contractual duties of care he owed to MS in advising MS regarding the redo-CABG;

(c) third, whether Dr Tong breached the tortious and contractual duties of care he owed to MS in carrying out the redo-CABG surgery.

I will deal with the issues in the order set out above.

The legal framework: the Bolam test, as supplemented by Bolitho

33 In Singapore, the legal framework for medical negligence was set out by the Court of Appeal in *Khoo James v Gunapathy d/o Muniandy* [2002] 1 SLR(R) 1024 ("*Gunapathy*"). I am guided by the approach taken in *Gunapathy* where the Court of Appeal opined at [4] that it was desirable to "set out the applicable law at the outset in order to keep a tight rein on the arguments" before the court, as "the cart must be put before the horse to prevent it from galloping off on an erroneous tangent".

34 In *Gunapathy*, the Court of Appeal conducted a comprehensive review of the jurisprudence following from the seminal case of *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582 ("*Bolam*"), and affirmed that the test laid down in *Bolam* ("the *Bolam* test") and supplemented by *Bolitho v City and Hackney Health Authority* [1998] AC 232 ("*Bolitho*") was the applicable test in Singapore.

35 The well-known *Bolam* test comprises two limbs. The first limb provides that when a situation involves some special skill or competence, the standard of care the defendant will be held to is that of "the ordinary skilled man exercising and professing to have that special skill" (at 586). McNair J stated the second limb as follows (at 587):

> [A doctor] is not guilty of negligence if he has acted in accordance with a practice accepted as proper by a responsible body of medical men skilled in that particular art ... Putting it the other way round, a man is not negligent, if he is acting in accordance with such a practice, merely because there is a body of opinion that takes a contrary view.

36 Subsequent cases which interpreted and applied the *Bolam* test had the unintended effect of "[conferring] near-immunity to the medical profession from actions in negligence" (*Gunapathy* at [58]).

37 In *Bolitho*, the House of Lords did a timely review of the second limb of the *Bolam* test and clarified that the court was not bound to find for a defendant doctor simply because a body of experts testified in his favour (at 241 – 242):

> ... [T]he court is not bound to hold that a defendant doctor escapes liability for negligent treatment or diagnosis just because he leads evidence from a number of medical experts who are

genuinely of opinion that the defendant's treatment or diagnosis accorded with sound medical practice ... the court has to be satisfied that the exponents of the body of opinion relied upon can demonstrate that such opinion has a logical basis. In particular in cases involving, as they so often do, the weighing of risks against benefits, the judge before accepting a body of opinion as being responsible, reasonable or respectable, will need to be satisfied that, in forming their views, the experts have directed their minds to the question of comparative risks and benefits and have reached a defensible conclusion on the matter.

[emphasis added]

38 While the House of Lords was concerned to emphasise that not all expert opinions would be accepted, it was also quick to emphasise that it would be a *rare* case where the opinion did not meet the threshold test of logic (at 243):

In the vast majority of cases the fact that distinguished experts in the field are of a particular opinion will demonstrate the reasonableness of that opinion. In particular, where there are questions of assessment of the relative risks and benefits of adopting a particular medical practice, a reasonable view necessarily presupposes that the relative risks and benefits have been weighed by the experts in forming their opinions. But if, in a rare case, it can be demonstrated that the professional opinion is not capable of withstanding logical analysis, the judge is entitled to hold that the body of opinion is not reasonable or responsible.

I emphasise that in my view it will very seldom be right for a judge to reach the conclusion that views genuinely held by a competent medical expert are unreasonable. The assessment of medical risks and benefits is a matter of clinical judgment which a judge would not normally be able to make without expert evidence ... it would be wrong to allow such assessment to deteriorate into seeking to persuade the judge to prefer one of two views both of which are capable of being logically supported. It is only where a judge can be satisfied that the body of expert opinion cannot be logically supported at all that such opinion will not provide the benchmark by reference to which Dr Tong's conduct falls to be assessed.

39 The Court of Appeal in *Gunapathy* (at [63]) opined that "*Bolitho* presented a timely addendum to the *Bolam* test", as it "gave voice to a commonsense understanding which was hitherto unexpressed – that the *Bolam* test did not represent immunity from judicial inquiry over the medical process". The *Bolitho* caveat was that in order for an expert view to qualify as a "responsible" body of medical opinion, it had to satisfy the threshold test of logic. Therefore, the question was what the threshold test of logic entailed and this was examined in *Gunapathy* at [64]:

64 ... Lord Browne-Wilkinson described it as an essentially two-stage inquiry and we would respectfully adopt his analysis. *The first inquiry*, according to the learned Law Lord, *is whether the expert directed his mind at all to the comparative risks and benefits relating to the matter*. It is accordingly the process and not the result of the expert's reasoning that is material in the eyes of the court. The court must be satisfied that the expert had considered and weighed all the countervailing factors relevant to the issue. Bare and unsupported assertions in this respect would thus fail the test at this stage.

6 5 *The second stage of inquiry relates to whether the medical expert had arrived at a 'defensible conclusion' as a result of the balancing process* ... To our minds, a 'defensible conclusion' connotes the satisfaction of two concepts. *First, the medical opinion must be internally consistent on its face*. It must make cogent sense as a whole, such that no part of the opinion contradicts with another. A doctor cannot say, for example, that he supports a certain

approach and attest that in that very situation, he would nevertheless have done quite the opposite. *Second, the opinion should not fly in the face of proven extrinsic facts relevant to the matter*. It should not ignore or controvert known medical facts or advances in medical knowledge.

[emphasis added]

40 The Court of Appeal also unequivocally stated that "judges and lawyers should not play at being doctors" and thus should not enter the fray that is the arena of divided medical opinion, as the "lawyer-judge, while eminently equipped to follow such arguments, finds himself quite out of his depth when called upon to adjudicate over them" (at [3]). Therefore, *Bolitho* cannot be understood to "herald invasive inquiry into the merits of medical opinion".

Issue 1: Whether Dr Tong breached the tortious and contractual duties of care he owed to MS in recommending that he undergo the redo-CABG

41 The question of whether a particular medical intervention is justifiable is the starting point of the inquiry. If the procedure in question is not justifiable, then a patient would not need to be advised of that procedure and, in fact, should not be advised of such a procedure. The issue of whether the particular procedure is justifiable at all must also be considered before the issue of whether the performance of that procedure was negligent. *Jackson & Powell on Professional Liability* (Sweet and Maxwell, 6th Ed, 2007) ("Jackson & Powell") at paragraph 13-087 lists the following considerations to be taken into account in determining this issue:

> Whether or not the intervention undertaken can be justified will be determined by the extent of investigation, consideration of less "invasive" regimes or management, and on expert opinion of the appropriateness of the treatment used.

While it is undisputed in the instant case that MS signed a consent form on 11 March 2007, prior to the redo-CABG, a patient's consent to a medical procedure is not a defence in circumstances where no reasonably competent medical practitioner would have proceeded at all. In *Doughty v North Straffordshire HA* [1992] 3 Med LR 81, the patient in question consented to the treatment but the defendants were held liable under the *Bolam* test as no body of reasonably competent medical opinion would have exposed the patient to such treatment.

MS' coronary anatomy

MS had a left dominant coronary anatomy

42 Before going into the expert evidence, it is necessary to have an appreciation of MS's coronary anatomy. It was undisputed among the experts on both sides that while most people have right dominant coronary anatomies, MS's coronary anatomy was left dominant. While a left dominant coronary anatomy is not problematic in itself, it is a feature that was unequivocally accepted by the experts to have had implications for surgery.

43 A right dominant person has arterial blood supplied to the left ventricle of the heart split proportionally among the three main coronary arteries approximately as follows: RCA (25%), Cx (15%), LAD (60%). The supply from the RCA to the left ventricle comes from the RCA's supply of blood to the posterior descending artery ("the PDA"), an artery that reaches the crux of the heart and perfuses some of the left ventricle's muscles along the way. On the other hand, a left dominant person's PDA is supplied by the Cx and not the RCA. This means that the RCA supplies negligible blood

to the left ventricle, which then depends entirely on the left coronary arterial system ("the LCA") for its supply of oxygenated blood. The LCA is the arterial system which includes the LMCA, the Cx and the LAD (see [9] above). The Cx and the LAD are smaller (but still extremely vital) arteries which are supplied by the larger LMCA.

44 The left ventricle of the heart pumps oxygenated blood from the heart into the aorta to be transported to the rest of the body. In the words of Dr Richard Cooke ("Dr Cooke"), one of the plaintiff's experts, the left ventricle "is the most important chamber" of the heart and also "the chamber upon which life depends". As MS was left dominant, his RCA carried negligible amounts of blood to the left ventricle. His Cx, however, was dominant and larger than in most cases, and compensated for negligible blood flow via the RCA by supplying oxygenated blood to the PDA (which would be supplied by the RCA in the more common anatomy of the right dominant person).

45 The upshot of all this is that while a right dominant person's Cx is responsible for around 15% of the oxygenated blood supply to the left ventricle, MS's Cx was responsible for almost 40% of the said supply. It was thus clear that the continued viability of MS's Cx was vital.

The diseased state of MS's coronary arterial system

46 It was uncontroversial that MS's coronary arterial system was severely diseased. We have already established that MS's LAD and Cx were responsible for most (if not all) of the supply of oxygenated blood to his left ventricle. As explained above, both his LAD and his Cx were supplied by the LMCA. From a reading of the angiogram, the expert witnesses opined that MS's LMCA suffered a 50% stenosis.

47 I have explained above that coronary angiography involves shooting dye through a patient's coronary arterial system in order to visualise it. An angiogram comprises a series of videos (taken from different angles) of the dye passing through the patient's blood vessels. The experts were allowed to give a running commentary on MS's angiogram as they were being cross-examined in court. It was demonstrated to the court that as the dye was shot through MS's LMCA, the visible dye flow tapered to 50% of its width at the mid LMCA. This allowed the experts to determine that MS had a 50% stenosis at the mid LMCA. It was also explained to the court (and this accords with simple physics) that a 50% stenosis (*ie*, a reduction of the diameter of the vessel by half) would correspond to a reduction in the cross-sectional area to 25%. Therefore, the blood carrying capacity of MS's LMCA, which supplied most of the blood to MS's left ventricle, had been reduced by disease to 25% of its normal capacity.

48 The non-viability of MS's coronary system was compounded by further disease in MS's Cx and LAD. Dr Tong stated that MS's Cx was 99% stenosed at its ostium (*ie* where it originated from the LMCA). Dr Christopher Blauth ("Dr Blauth"), one of the plaintiff's experts, was not prepared to accept the 99% figure, but readily conceded that the stenosis was "definitely very tight". As for MS's LAD, while the experts disagreed on the patency of the LIMA-LAD graft, it was uncontroversial that the LAD system was diffusedly stenosed. The supply of blood to MS's left ventricle and the rest of his body was thus compromised.

The evidence of the plaintiff's experts

49 The plaintiff called four experts, three of whom I have already mentioned above. They were:

(a) Dr Blauth, a consultant cardiac surgeon and clinical head for cardiac surgery at the Cardiothoracic Centre at the Guy's and St Thomas' NHS Foundation Trust in London;

(b) Dr Cooke, a consultant cardiologist at the Guy's and St Thomas' NHS Trust and South Kent NHS Trust;

(c) Dr Sanjay Sharma ("Dr Sharma"), a consultant cardiothoracic surgeon at Fremantle Hospital in Western Australia; and

(d) Dr Alan Patrick Whelan ("Dr Whelan"), an interventional cardiologist at the Fremantle Hospital in Western Australia in private practice.

50 This is an appropriate juncture to distinguish between the job scopes of cardiothoracic surgeons and cardiologists. Cardiothoracic surgeons, such as Dr Tong, are qualified to do open heart surgeries such as CABGs and redo-CABGs. Where the procedure to be performed is non-surgical, this will fall outside of the province of cardiothoracic surgeons, *eg*, cardiothoracic surgeons do not carry out PCI as it is a non-surgical procedure. Procedures such as PCI are more properly within the province of interventional cardiologists such as Dr Christopher Chew. Cardiologists do not perform surgical procedures. Cardiothoracic surgeons and cardiologists thus complement one another and often work together in teams.

51 The plaintiff's experts took the view that a redo-CABG was not indicated and that Dr Tong breached his duty of care by referring MS for a redo-CABG. In their view, MS's condition had stabilised in the days after his AMI. Dr Cooke stated in cross-examination:

> There was no reason to indicate that that lesion [referring to the Cx ostial stenosis of 99% or so] was unstable. The heart attack had been caused by thrombosis in the vein grafts and not by thrombosis in the native coronary artery. The patient had no further chest pain after the heart attack had been completed, so there were no clinical pointers to the fact that that lesion in the native coronary artery may have been unstable.

52 In addition, the plaintiff's experts were of the opinion that the LIMA-LAD graft was patent and demonstrated "brisk flow" into the distal LAD. The experts found that since MS had no further angina once his heart attack had settled, his prognosis would not be improved by an urgent redo-CABG. As the plaintiff's experts considered revascularisation unnecessary (at least, unnecessary at that particular point in time so shortly after the AMI) they would have recommended that MS be put on OMT. OMT is the most conservative treatment option for coronary artery disease and does not achieve revascularisation, unlike PCI or CABG. OMT essentially consists of an intensive regimen of medication and lifestyle changes to try to reduce the likelihood of a further MACE like an AMI. OMT may involve the administration of medication to control hypertension and/or thin the blood.

53 Even if revascularisation was deemed necessary, the plaintiff's experts thought that it should have been done by way of PCI. PCI is a revascularisation procedure which involves the use of balloons and stents to widen stenosed arteries and prevent them from subsequent narrowing for as long as possible. A balloon will be passed through the coronary arteries to reach the stenosed segments. The stenosed segment will then be dilated with the balloon under high pressure, and stents placed in the arteries to try to keep the artery open.

54 It is uncontroversial that it is preferable to carry out PCI when the stenting procedure is

"protected", *ie*, when the heart is protected by a good supply of blood from an additional artery while the stenting is being carried out. The reason for this is that the patient is not placed on a bypass machine while PCI is being carried out and, if in the course of the procedure, the artery being stented becomes occluded, there will be no alternative supply of blood to the heart and the patient would go into an immediate AMI. In the view of the plaintiff's experts, MS would be protected by the brisk flow through the LIMA-LAD graft and a PCI would thus be a low risk procedure in his case. Dr Cooke went so far as to suggest that the stenting procedure carried an extremely low risk even if MS did not have a patent LIMA-LAD graft, stating that the aforementioned risk of complete occlusion would be less than 0.1%.

55 Dr Sharma also pointed out that the redo-CABG was a high risk surgery for several reasons, including the possibility of heavy bleeding due to the adhesions of the heart resulting from the first CABG as well as the increased mortality risk arising from operating on a patient just following an AMI. The plaintiff's experts calculated the risk score to be in the region of 14% from the EuroSCORE risk scoring system and opined that Dr Tong's risk estimate of 3% was a "considerable underestimate". [note: 6] The following excerpt from Dr Sharma's affidavit summarised the position of the plaintiff's experts:

> Hence, I am of the opinion that advice to [MS] to undergo Redo-CABG surgery was below reasonably acceptable standards expected of a reasonably competent cardiothoracic surgeon in the circumstances. In fact the risks involved in undergoing a Redo-CABG heavily outweighed the benefits the patient would have received. [note: 7]

The evidence of Dr Tong's witnesses and experts

56 Dr Tong took the stand himself. He also called the following factual witnesses:

(a) Dr Christopher Chew, the consultant interventional cardiologist at the Mount Elizabeth Medical Centre, who was MS's cardiologist;

(b) Dr Tan Yong Seng ("Dr Tan"), a consultant cardiothoracic surgeon at Gleneagles Medical Centre, who was the assistant surgeon during MS's redo-CABG; and

(c) Dr Suelyn Chew, a consultant anaesthetist at SL Chew Anaesthesiology, who was the anaesthetist involved in MS's redo-CABG.

As for expert witnesses, Dr Tong called:

(a) Professor Brian F Buxton ("Prof Buxton"), a professor at the Department of Cardiac Surgery, University of Melbourne, Austin Hospital; and

(b) Dr Sin Yoong Kong ("Dr Sin"), the head and senior consultant cardiothoracic surgeon at the National Heart Centre, Singapore.

57 One of the sub-issues that Dr Tong and his witnesses were called on to answer was whether

MS had suffered post-infarction angina after his AMI. This sub-issue comes under the first heading of whether Dr Tong was negligent in recommending the redo-CABG and was the only sub-issue under the first heading that the plaintiff substantially pursued in her written submissions. It was uncontroversial that post-infarction angina indicated the need for revascularisation. Counsel for the plaintiff confronted Dr Tong and his witnesses with a pain flow sheet from the hospital which showed that MS had not suffered pain after 10 pm on 9 March 2007, the day he suffered his AMI. [note: 8] Faced with this piece of contemporaneous evidence, Dr Tong and his witnesses had to concede that MS's pain had been resolved but emphasised that the resolution of pain was *due to the medical treatment MS was receiving*. Dr Christopher Chew, for example, stated the following on cross-examination:

> MR PALANIAPPAN: Concentrating on the clinical symptoms, Dr Chew -- let's not go into this issue of anatomy as yet -- you would agree with me that the late Mr Milakov, after the initial myocardial infarct, the residual pain, and the treatment that you gave, did not have post-infarction angina -- you would agree with that?
>
> *A.* *Because he was on treatment, yes*.
>
> [emphasis added] [note: 9]

58 Dr Sin took a similar position:

> Q. Dr Sin, my question to you is: the evidence here showed the pain was resolving and there was a complete remission of pain; would you agree with me?
>
> A. I would agree that the pain appeared to get better *with medical therapy*.
>
> [emphasis added] [note: 10]

59 As for the LIMA-LAD graft, Dr Tong opined that MS did not have a good functioning LAD and that there was 90% stenosis at the mid-segment of the LAD and a further 60% stenosis of the LAD distal to the anastomosis of the LIMA-LAD graft ("stenosis of the distal LAD"). This meant that the blood flow in the distal LAD was obstructed. When asked to comment on this by Dr Tong's counsel, Dr Christopher Chew stated:

> while the LIMA graft is patent and there is some flow to the circumflex into the LAD system, that system itself was severely diseased and, in conjunction with a dominant circumflex artery whose continued patency -- his survival depended on the continued patency of this graft, *I was of the opinion that if that circumflex artery occluded, the amount of flow in the anterior wall would not be enough to sustain life* and, in fact, my concern from the very outset has been this circumflex coronary artery, which was, in my opinion, the artery upon which he depended on, his survival.
>
> [emphasis added] [note: 11]

60 Further, Prof Buxton took the view that there was "really a very poor flow" in the distal LAD, going so far as to say that he would "regard that as almost non-functional". When asked whether MS had a protected LMCA, Prof Buxton's reply was:

> Effectively, no, because I think there's insufficient flow proximally and we can't see anything going up there at all and, secondly, the collateral flow from that terminal distal LAD vessel to the

circumflex system would be insufficient to protect the left main or the circumflex. [note: 12]

61 This view that MS did not in fact have a protected LMCA had implications on the viability of PCI as an alternative treatment. Dr Christopher Chew was asked to comment on this by counsel for Dr Tong:

> Q. Dr Chew, what were your views on had this patient had a protected left main due to the presence of the LIMA graft?
>
> A. Well, I myself have conducted left main stenting in protected left main coronary arteries. Here, the situation, there are three coronary arteries -- a right functioning coronary artery that protects the inferior wall, another artery to protect either the anterior part of the wall or the circumflex, so, in theory, the patient is protected because there's -- at least two-thirds of the left ventricle is protected, so much so that if one conducted left main stenting and it occluded, there is the possibility of survival.
>
> *On the other hand, this patient has a dominant circumflex artery, for which – upon which his survival depended on its patency. In the event of obstruction or occlusion of the left main, either during the procedure or during the natural history of the illness, where the circumflex artery is carrying at least 40 per cent of his blood flow, his chances of survival are extremely unlikely*.
>
> [emphasis added] [note: 13]

62 When asked to comment on Dr Christopher's Chew's response, Dr Sin said:

> A. I think this is a very fair comment. In my institution, we do 4,000 angiograms a year, 2,000 PCIs, and as a surgical team, *we are frequently called by our cardiologist to the cath lab with an anatomy that is fairly similar to this, and whenever the right is non-dominant*, or if the right is diseased and deemed incapable of protecting the myocardium, *and where there is significant left main disease and the patient deemed high risk, they will not do a PCI. And even when I say that, you know, surgically, this is very high risk, they say, "Sorry, can you please do the surgery?*"
>
> [emphasis added] [note: 14]

63 As for whether Dr Tong's risk estimate of 3% for the redo-CABG was negligent, Dr Sin and Prof Buxton pointed out that when they used the alternative "Society of Thoracic Surgeons" ("STS") risk scoring system, they produced risk estimates of 2.3% and 1.7% respectively.

Sub-issues relating to Dr Tong's recommendation of a redo-CABG to MS

64 The following sub-issues have arisen for determination:

(a) Whether the flow of blood to the distal LAD was adequate;

(b) Whether PCI was the superior option for revascularisation as opposed to a redo-CABG;

(c) Whether Dr Tong's risk estimate of 3% was such an underestimate as to amount to a breach of his standard of care;

(d) Whether Dr Tong's mistaken conclusion that MS had post-infarction angina or unstable angina was an irrelevant consideration that he should not have taken into account in choosing to recommend the redo-CABG;

(e) The significance of the possibility of a further AMI as a factor in Dr Tong's decision to recommend the redo-CABG and the timing of the recommended redo-CABG;

(f) The significance of MS's improvement after his AMI as a factor in Dr Tong's decision to recommend the redo-CABG; and

(g) The significance of the rarity of MS's medical situation as a factor in Dr Tong's decision to recommend the redo-CABG.

Sub-issue 1a: Whether the flow of blood to the distal LAD was adequate

65 One important area of dispute was the adequacy of blood flow provided to the distal LAD. As stated above, Dr Tong's view was that blood flow to the distal LAD was inadequate. This diagnosis was arrived at on the basis of Dr Tong's reading of the angiographic studies as well as MS's clinical history presentation. Under cross-examination, Dr Tong agreed that the stenosis of the distal LAD would be a significant clinical finding. However, counsel for the plaintiff pointed out that these findings were not mentioned by Dr Christopher Chew in documents prepared prior to the trial, though he had the opportunity to do so on three separate occasions.

66 First, in Dr Christopher Chew's affidavit, his only finding with regard to the LAD was that it was "relatively small and diffusely atherosclerotic". [note: 15] Dr Tong then replied that Dr Christopher Chew had found diffused stenosis of the LAD and that the only difference between his view and Dr Christopher Chew's view was that the percentage of stenosis was not recorded.

67 Second, in both of Dr Christopher Chew's two entries in the Clinician's Collaborative Progress Notes ("the Clinician's Notes") on 9 March 2007, there was no mention of any finding of stenosis of the distal LAD. Dr Tong replied that such findings would not be recorded, as they were not clinical findings, but angiographic findings or investigative findings. He explained that clinical notes were aimed mainly at noting the clinical appearance of the patient and how the patient appeared in response to the treatment.

68 Third, in the confidential medical report, prepared about 10 days after MS's death, [note: 16] Dr Christopher Chew did not discuss the stenosis of the distal LAD. In fact, Dr Tong himself did not mention the stenosis of the distal LAD in his letter to Dr Christopher Chew dated 29 April 2007, even though, at this time, he knew that the matter had been made a Coroner's case.

69 I considered these submissions but ultimately found that Dr Tong's expert witness, Prof Buxton,

provided convincing support for the medical view that blood flow to the distal LAD was inadequate. I have already referred to Prof Buxton's evidence at [60] above.

70 There was a dispute between the plaintiff's and Dr Tong's experts on the issue of whether the blood flow to the distal LAD was adequate. To put the matter at its simplest, the plaintiff's experts said that it provided adequate flow while Dr Tong's experts said otherwise. One of the reasons for disagreement was that the angiogram which was provided to the experts provided a "non-selective" view of the distal LAD. When Dr Christopher Chew conducted the angiogram for MS on the morning of 9 March 2007 when MS arrived in the hospital after his AMI, he was only able to achieve a "non-selective" shot of the LAD system in the angiogram. This was because when Dr Christopher Chew injected the dye into MS's circulatory system, he was not able to place the catheter in the precise location (*ie*, the orifice of the LIMA) which would best engage the vessels leading to MS's coronary arterial system. The catheter in this case had been placed past the LIMA and was sitting in the subclavian artery. This meant that there was a less than satisfactory amount of dye shooting through MS's coronary arterial system so as to opacify it and make it visible in the angiogram. A non-selective shot thus provided a sub-optimal view of the coronary vessels.

71 Therefore, the angiogram gave only a very faint view of the dye coursing through MS's coronary arterial system. I should say that the plaintiff did not take issue with Dr Christopher Chew's performance of the angiography, particularly given the emergency circumstances in which the procedure was undertaken, but was concerned about the implications of the non-selective shots. The lack of clarity in the view provided by the angiogram was fertile breeding ground for legitimate disagreement among the medical experts. The view that the blood flow to the distal LAD was inadequate could not be said to be illogical. Accordingly, I find in accordance with the *Bolam* test that Dr Tong was not negligent to have held the view that blood flow to the distal LAD was inadequate.

72 The view that there was an inadequate flow of blood through MS's distal LAD would lead a doctor to two further conclusions. First, that the overall blood supply to MS' heart would be very poor. As MS was left-dominant, his left ventricle depended almost solely on the Cx and LAD for its supply of oxygenated blood. However, his Cx suffered a "very tight" stenosis at the ostium which would mean that the blood flow through the Cx would be hampered. If the LAD also had an inadequate blood flow, this would mean that the total volume of blood to MS's heart might be insufficient. The poorer the blood flow to MS's heart, the greater the need for revascularisation. Second, if MS's distal LAD was receiving inadequate flow, then it could not serve as an alternative blood supply to the Cx to protect MS's heart during the stenting of the Cx in a PCI. This would thus cast doubt on whether PCI was, as the plaintiff argued, the superior option for revascularisation and it is issue that I will now address.

Sub-issue 1b: Whether PCI was the superior option for revascularisation

73 There appeared again to be genuine disagreement between the experts on both sides regarding this point. The plaintiff's expert, Dr Cooke, clearly thought that PCI would be safe even if it was carried out unprotected. While he acknowledged the nervousness that many interventional cardiologists might have in carrying out an unprotected PCI, he stated that medical views were changing:

> Q. So focusing on the circumflex, if PCI of those occluded SVG grafts were not an option, then the only other possibility would have been if you were to focus on PCI -- to do a PCI of the ostial location of the circumflex?
>
> A. That's correct, yes.

...

Q. Dr Blauth called it an important contraindication, the fact it's located at the ostium. Would you agree?

A. It's important to remember the context. It's an important location if the patient had no bypass grafts, because there was always a concern about placing stents and carrying out an angioplasty to the left main stem. Obviously the left main stem provides the blood supply to 75 per cent of the heart muscle or more, and if that were to occlude that would often be fatal, so for that reason always been a nervousness and hesitation about placing stents in the left main stem. *With advances in technology and modern stenting techniques, views on that actually are changing quite a lot and there are now many cases where cardiologists would actually offer a patient the choice of bypass grafting or stenting to the left main stem*. However, we're not talking about that situation in this case. In this case the patient had a patent functioning LIMA bypass graft, so he had a protected left main stem. In that context, reasonable cardiologists would consider angioplasty and not consider it to be at high risk.

[emphasis added] [note: 17]

74 On the other hand, Dr Christopher Chew's view was that MS was an unsuitable candidate for PCI. He stated in his affidavit at paragraph 18:

Subsequent PCI of MS's own native 'culprit" ostial Cx lesion was also not favorable. The L[M]CA was itself diseased. This would pose significant risks during passage of the balloon or stent towards the Cx. The lesion itself was located at the ostium of a critical coronary artery and undertaking PCI in this situation would have been hazardous.

75 I also noted his observation at paragraph 19:

I should also point out at this juncture that when MS first saw the doctors and surgeons at SJMC, they had also decided not to offer PCI. In fact, MS's surgeon seems to have written in his clinical notes at SJMC on 19 January 2007 "DX1 Severe 3V CAD *Not Suitable to PCI* " (emphasis added). ...

76 Further, Dr Sin testified as follows:

COURT: So do I take it, based on your evidence, that if you were Dr Tong on 9 March, you would have made the same decision?

A. When I looked at the preliminary evidence I walked his steps -- you know, I looked at the angiogram, I looked at the presentation, *I looked at what Dr Chew said, and it's pretty much the same what my cardiologist will tell me*, and if he really has that angina and looking at the pain score, which I wasn't aware until I was shown the pain score, and that is definite evidence that he had pain at the point of presentation, and if I had seen him and he is still having pain, and looking at his anatomy, I would – I think it would be my duty to offer him surgery as an option. I may not necessarily say that you must take it, but it is my duty to give him as an option.

[emphasis added] [note: 18]

77 It was also emphasised to me that PCI is a non-surgical option. Therefore, the decision to offer PCI is within the domain of an interventional cardiologist and not that of a cardiothoracic surgeon. Dr Christopher Chew, MS's interventional cardiologist, had decided, based on the angiogram, that the LIMA-LAD graft did not provide sufficient blood supply as to protect MS's heart and decided not to recommend PCI. On cross-examination, the plaintiff's expert, Dr Blauth, accepted that it would not be unreasonable for a surgeon to accept an interventional cardiologist's opinion that PCI was unsuitable if that accorded with the surgeon's own judgment or if the surgeon took the view that the interventional cardiologist had considered the matter and arrived at a sound decision. [note: 19]

78 Moreover, counsel for Dr Tong also urged the court to keep in mind that that when MS originally presented at SJMC on 17 January 2007 with angina, the doctors there found that CABG was indicated and that PCI was unsuitable. At that stage, MS had only suffered angina but not an AMI. Further, this was a case of angina occurring after exercise, as opposed to angina occurring while at rest. The latter situation would have been greater cause for concern. On cross-examination, the plaintiff gave evidence that although MS preferred to defer the bypass and return to Singapore for the procedure, he was advised by the doctors to undergo the initial CABG immediately in Houston.

79 Turning now to 9 March 2007, when MS presented himself at MEH, it was clear that his medical condition was worse than when he had presented at SJMC on 17 January 2007. First, he had suffered an AMI, a more serious cardiac event than mere angina, as the AMI had caused some of his heart muscle to die. Muscle necrosis is irreversible and the muscle cannot be revived even on revascularisation. Second, his Left Ventricular Ejection Fraction ("LVEF") had reduced from 59% in SJMC to 49% at MEH. Third, he suffered the AMI despite being at rest, having adopted a fairly sedentary lifestyle generally and rigorously following the medication regime prescribed to him.

80 This was accepted by Dr Whelan, one of the plaintiff's experts: [note: 20]

> Q. This was a patient who, prior to his AMI on9 March, had for a period of seven weeks been continuously on drugs designed specifically to protect the heart functions and to ensure that a repeat ischaemia, angina or AMI would not occur; correct?
>
> A. Correct.
>
> Q. And then he had -- despite those medications --suffered an AMI on 9 March.
>
> A. Correct.

81 Therefore, counsel for Dr Tong argued that if a CABG had been indicated in preference to a PCI when MS presented in SJMC, *a fortiori*, a CABG would be indicated when MS presented at MEH. I found this argument persuasive.

82 On the evidence, I find that Dr Tong did not breach his duty of care under the *Bolam* test in deciding not to recommend PCI over the redo-CABG option. I also accept the defence's case is that it would be unusual for a surgeon to oppose a competent cardiologist's recommendation regarding the suitability of PCI.

Sub-issue 1c: Whether Dr Tong's risk estimate of 3% was such an underestimate as to amount to a breach of the standard of care

83 I will now consider the question of whether Dr Tong's estimated risk of 3% was made negligently. This is separate from the issue of whether the percentage figure was in fact conveyed to

MS, which will be examined later. On this sub-issue, the tenor of the plaintiff's argument was that the estimate of 3% was such an underestimate as to show that Dr Tong did not properly address his mind to the issue of risk and thus breached the standard of care to MS. The experts on both sides proposed risk scores ranging from the lowest of 2.3% (by Dr Sin) using the STS model to the highest of 14.34% (by Dr Sharma) using the EuroSCORE model. These models are international risk scoring systems, created based on data generated from various cardiac centres. For example, the EuroSCORE model is generated from cardiac centres in Europe. Using one of these models is similar to filling up an online survey form. Various questions about the patients are asked and one chooses from a set of pre-determined answers. After all the answers are entered, a risk score is generated.

84 The risk scores generated by the models differ on two counts. First, the questions in the STS model and the EuroSCORE model differ, as do the specificity of the pre-determined answers available for selection. Second, even when using the same risk scoring model, two different doctors might select slightly different answers to the questions posed by the model. This is because some degree of medical assessment of the patient is required to select an option; and different doctors might have slightly different views. I thus found that the EuroSCORE and STS risk models served only to provide a "scoring guide" [note: 21] (in the words of Dr Sin) in helping doctors to estimate risk scores for their patients. Risk scores responsibly produced by different doctors for the same patient could legitimately differ to some extent.

85 The arbitrariness of the risk models was also highlighted to me. The EuroSCORE model defines left ventricular function as "moderate" if its level of function is at 30 to 50%. MS's LVEF was 49%. By selecting "moderate", MS's risk score was 8.66%. However, if MS's ventricular function improved ever so slightly as to cross the 50% threshold into "good", his risk score would be dramatically halved to 4%.

86 In addition, it is noteworthy that these models are primarily used to assess cardiac centres, as opposed to assessing risks for individual patients. Dr Sin is also the director of quality management at the National Heart Centre and he explained that he primarily used these models to benchmark the quality of his institution against other institutions. The *primary* use of these models is to tell hospital directors whether their cardiac departments are up to scratch. However, the data from the models also helps individual cardiac patients to estimate the risks of medical procedures.

87 I also noted that while the EuroSCORE model consistently produced risk scores in the region of 14%, the plaintiff's experts readily conceded that a well-known criticism of the EuroSCORE model is that it overestimates risk. This was supported by a medical article from the Netherlands Heart Journal aptly titled "Evaluation of the EuroSCORE risk scoring model for patients undergoing coronary artery bypass graft surgery: a word of caution." [note: 22]

88 Finally, it was also uncontroversial among the experts that personal performance data for individual surgeons were highly relevant in estimating the risk for a patient. At the material time, Dr Tong had encountered two mortalities out of 115 redo CABGs, giving a mortality rate of 1.74%. When questioned about this, Dr Tong stated on cross-examination that several of the patients in the "successful" cases were actually higher risk cases than MS. [note: 23] This could not be easily challenged but Dr Tong's above-par performance statistics as a surgeon were undisputed and this stood him in good stead. Considering all the evidence, I find that the risk estimate of 3% was not negligently made.

Sub-issue 1d: Whether Dr Tong's mistaken conclusion that MS had post-infarction angina or unstable angina was an irrelevant consideration that he should not have taken into account in

choosing to recommend the redo-CABG

89 As stated above, the plaintiff alleged that one of the factors that Dr Tong took into consideration in recommending the redo-CABG was the ongoing angina pectoris suffered by MS. However, as clearly evinced by the pain flow sheet, [note: 24] MS did not suffer any pain after 10 pm on 9 March 2007 and remained pain-free until the time that he underwent surgery. Although Dr Tong conceded this point, [note: 25] he asserted, consistently with his other factual and expert witnesses, that MS's pain-free state was only achieved by placing him under medical treatment. On the basis of his witnesses' evidence, I accepted Dr Tong's opinion in this regard as reasonably and non-negligently held.

90 It is apposite to note at this juncture the plaintiff's objection to Prof Buxton's expert opinion that Dr Tong was reasonable in proceeding with the redo-CABG. The plaintiff's objection was on the basis that Prof Buxton had been confused about wrongly entered dates in the Clinician's Notes. A 7.30am entry which recorded MS as being comfortable overnight with no chest pain was mistakenly dated 10 March 2007 when it should have been 9 March 2007. Prof Buxton did not appreciate this until the trial. Reading this with the earlier 9 March 2007 entries which indicated MS suffered from angina, it might have caused him to mistakenly believe that MS suffered unstable angina (*ie*, that MS progressed from not having angina to having angina again), when the reality was that MS's angina had resolved gradually upon admission to Mount Elizabeth Hospital.

91 However, on being cross-examined subsequent to the clarification of his confusion about this, Prof Buxton continued to emphasise the effect of pain relieving medications and qualified his agreement that there was no evidence of post-infarction angina by saying that there was no *clinical* evidence:

> Q. If we assume for a moment that that should reflect 10 March, would you not agree with me that despite the reduction in GTN, here was a patient who was feeling comfortable overnight and there is a note which says "No chest pain" -- is of some significance?
>
> A. Yes, I think that is -- yes, but don't forget it wasn't just on GTN. *This patient was on a number of pain relieving medications, and anti-platelet and so forth*. So, I'd agree that it suggests that there is an improvement.
>
> Q. Dr Buxton, my question is: taking into account the fact that he remained pain free the later part of the 9th, 10th and 11th, would it be fair to say that there is no evidence of post-infarction angina?
>
> A. *No clinical evidence*.
>
> [emphasis added] [note: 26]

Coupled with the evidence given by Dr Tong's other witnesses, I found that Prof Buxton's evidence continued to be reliable despite his misapprehension regarding the dates of the medical records.

Sub-issue 1e: The significance of the possibility of a further AMI as a factor in Dr Tong's decision to recommend the redo-CABG and the timing of recommended redo-CABG

92 This was Dr Tong's explanation of his thought process behind the recommendation of the redo-CABG: [note: 27]

> The surgery is take -- done with two views. One is to relieve his intermediate immediate danger, also -- as well as in order to give him this relief of -- relief of a severe coronary artery disease in the long term, in other words, to prolong his life.

Further, Dr Tong opined that *MS's positive response to medical treatment while in hospital (ie, the resolution of angina) did not mean that MS's underlying coronary disease had been cured*, and there was "always a possibility of a relapse". This relapse could occur without warning, at any time. [note: 28] In other words, Dr Tong's case was that even though the clinical symptoms, specifically the post-infarction angina here, had resolved, the issue of the coronary disease had not been resolved and something had to be done to treat it.

93 Dr Christopher Chew's evidence was consistent with this, as he stated on cross-examination that the doctors were concerned to treat MS's underlying coronary disease:

> Q. Would you agree with me that while we don't treat the ECG, it would have provided information that his condition was resolving?
>
> A. His heart attack was resolving. His chest pain was resolving. *But his anatomy was the one that was of great concern to all of us, and we were treating the anatomy rather than the chest pain at that time*.
>
> Q. Dr Chew, would you not agree with me that there was no evidence that the late Mr Milakov was suffering from post-infarction angina?
>
> A. Well, he was under treatment and he didn't have any chest pain, but he had a severe culprit lesion, okay?
>
> [emphasis added] [note: 29]

94 Even so, Dr Sharma, an expert witness for the plaintiff, testified that scarring in the first six months would be very vascular and thus opined that the "worst time to re-operate or to perform a redo ... [was] close to the primary surgery". I understand this to mean that even if a redo-CABG was indicated to treat MS's underlying coronary disease, Dr Tong ought not to have carried it out on an urgent basis.

95 However, it was common ground between the expert witnesses that there was a risk of another AMI occurring and that this could happen out of the blue, without warning. Dr Tong's position was that while the redo-CABG was being performed a relatively short while after the initial CABG (45 days) and a short while after the AMI (three days), this had to be balanced against the need for the redo-CABG and *the risk that MS might die from a further AMI if he waited a longer period before undergoing the redo-CABG*. As Dr Chew noted in his affidavit at paragraph 29,

> "Essentially, [MS] had to take the risk of undergoing another major surgery [*ie* the CABG] or take the higher risk of another heart attack or sudden death if he did not go for the surgery."

96 Prof Buxton described the medical situation as a "*trade-off*" in his cross-examination:

A. ... but, on the other hand, there's a trade-off here, and that is that if a patient has had a big infarct, and we won't go into the symptoms of how long they took to settle, but had a big infarct*, one is careful not to wait too long and allow any further damage to occur, so one is keen to move along, if one can, without compromising the situation any further*.

So, in other words, if you wait for long enough in a situation, as you heard Dr Chew this morning say, that there's a 90 per cent stenosis in the remaining circumflex and almost no blood flow through the distal LAD*, you run the risk of the patient dying just by waiting, so it's a trade-off*, and -- certainly, that's the first thing, so death is a major concern with a discussion with the patient. ...

[emphasis added] [note: 30]

97 What was perhaps the most evocative turn of phrase came from Dr Sin on the stand:

I say "*a ticking time bomb*" to my patients. I think that's probably more apt -- it's a time bomb. *Any time it goes, it goes*. Even if I list you for surgery a week, two weeks, three weeks, there's nothing to say that just a day before you get a massive heart attack and don't make it in time.

[emphasis added] [note: 31]

The phrase "a ticking time bomb" clearly captures the risk in delaying the redo-CABG. However, as will be expanded on in greater detail later, this was a risk that could not be calculated.

98 I also found the following paragraph from Prof Buxton's written expert opinion particularly illuminating:

[3]. **Timing of Operation**

3.1 A dilemma in planning surgery with an unstable patient is the timing of the CABG procedure. In general, the risk of early operation is high and, the more unstable the patient's condition the higher the risk. This was the situation with MS at the point of the [re]do-CABG because of the AMI he suffered prior to the redo-CABG. Many surgeons would rather wait until the patient stabilises and the risk is lower. An extension of the time of recovery before a redo-CABG may enable more planning, such as the assessment of the coagulation profile, the addition of anti-fibrinolytic agents such as tranexamic acid, and the allowance of time for recovery post infarction. *On the other hand, the risks of infarct extension or re-infarction which can occur with little warning while waiting for the redo-CABG may be serious or even fatal. Waiting is also attended with a risk of ischaemia recurring during the critical time window*. An intermediate course is to observe the patient's condition and continue a conservative policy as long as there are no signs of deterioration. *There is no correct answer to this dilemma. In MS's case, he was managed aggressively by an offer of surgery because the risks of further ischaemia and infarction were estimated to be high*.

[emphasis added]

99 Prof Buxton went on in the same paragraph to note that MS was considered a "late" case of intervention:

Dr Tong also waited till Day 3 (3 days after the initial AMI on 9 March 2007) before performing the

redo-CABG, allowing MS to stabilise through OMT. *Generally, an operation between Day 0 to Day 2 places the patient in the "early" group of intervention, whereas an operation on Day 3 and beyond places the patient in the "late" group of intervention*. In this clinical situation Dr Tong's decision to proceed with the redo-CABG was reasonable.

[emphasis added]

100 The court was also referred to a Journal of Thoracic and Cardiovascular Surgery article entitled "Optimal timing of coronary artery bypass after acute myocardial infarction: A review of California discharge data" [note: 32]. The article documented a study by John Hopkins Medical Institution which suggested that mortality risk for CABGs dropped notably three days after an AMI. On the totality of the evidence, I find that the risk of a further AMI was a significant factor that Dr Tong rightly considered in his decision to recommend the redo-CABG.

Issue 1f: The significance of MS's improvement after his AMI as a factor in Dr Tong's decision to recommend the redo-CABG

101 The plaintiff argued that the improvement of MS's health condition subsequent to his AMI on 9 March 2007 meant that the redo-CABG could be delayed. However, the defence countered with the alternative perspective that the recovery instead gave a window of opportunity to go ahead with the redo-CABG and this advantage had to be weighed in the balance. Dr Tong stated in cross-examination:

Q. Dr Tong, if at all his improving health provided Mr Milakov with a *window of opportunity to delay* the surgery –

A. Also a *window of opportunity to operate* on him.

[emphasis added] [note: 33]

In a similar vein, Dr Sin stated the following paradox in cross-examination:

A. ... Secondly, it also goes to show that when you give a patient risk, when the patient is relatively well, say, paradoxically, you don't have chest pain, and hence in this score your risk becomes low, and hence when you don't have symptoms -- *and I say "paradoxically", because when you don't have symptoms, I tell you you should have the operation because the risk is low. When you get symptoms, your risk goes up and then, paradoxically, I tell you, because you have symptoms, your risk has now gone up*.

Do I then conclude should I do the operation or should I not do the operation based on risk or symptoms? You can't base it on one single factor. You have to take the entirety and look at the patient as a whole.

[emphasis added] [note: 34]

102 Therefore, while the improvement which MS made after his AMI might be a reason to postpone the redo-CABG, I accepted that it was reasonable to take the view that this might equally be a reason to proceed with the surgery since MS's improved condition meant that he was more likely to survive the redo-CABG operation. Dr Tong also submitted that even if MS did not suffer a subsequent

AMI which would kill him, he might suffer another MACE which would further reduce cardiac function and "close the window for a redo-CABG". [note: 35] I understood this to mean that if this opportunity afforded by MS's improved health condition was not taken to proceed with the redo-CABG, there was no guarantee that it would still be available later.

Issue 1g: The significance of the rarity of MS's medical situation as a factor in Dr Tong's decision to recommend the redo-CABG

103 The plaintiff argued that a redo-CABG in the nature of what MS underwent was extremely rare for two reasons, which I have termed "the two proximities in time":

(i) the proximity in time between the initial CABG and the redo-CABG (about 7 weeks);

(ii) the proximity in time between the AMI and the redo-CABG (three days).

Indeed, Prof Buxton stated that in his 30 years of practice, he had done only one redo-CABG within six weeks of the initial CABG. He further stated that in this one case, the patient had not also just suffered an AMI, as was the situation in MS's case. [note: 36] Dr Sin also conceded that he had never encountered a patient in MS's situation. [note: 37] However, he elaborated that although it was unusual for a patient to have a redo-CABG so soon after the initial CABG, it was not unusual to have re-do *operations* within six weeks of open heart surgery and some operations were even deliberately staggered in that way because the patients were deemed to be high risk cases.

104 It can be seen that it is extremely rare for a patient to undergo a redo-CABG where there is a coincidence of the two proximities. Even so, I find that the fact of rarity of a redo-CABG in such circumstances should not be given undue weight. The reason for such rarity might be due to the reluctance of reasonable surgeons to proceed in the face of the increased risks, which could support a finding of a breach of duty, or might be due to the rarity of the coincidence of the two proximities in themselves, in which case it might be argued that a redo-CABG in such circumstances amounted to a desperate measure to treat a desperate situation.

105 As stated above, the plaintiff's case essentially boiled down to the assertion that reasonable surgeons in Dr Tong's position would have recognised that the risks involved in undergoing the redo-CABG outweighed the benefits which MS would have received. In 1921, Frank Hyneman Knight ("Knight") published a book entitled "Risk, Uncertainty and Profit". He shared an insight which I find helpful to the present analysis. Knight drew a distinction between risks (outcomes with defined probability distributions) and uncertainties (outcomes with undefined probability distributions). In other words, *w e know our odds when it comes to risks, but we do not when it comes to uncertainties*. To my mind, MS faced a risk when it came to proceeding with the redo-CABG, because the doctors could try to quantify the probabilities of things going wrong. However, when it came to declining the redo-CABG, he faced an uncertainty. As noted earlier, MS was akin to a "ticking time bomb" with an unknown detonation time. At the end of the trial, I asked Dr Sin what MS's odds were if he were to decline the redo-CABG:

COURT: I'm looking at it very simplistically. Assuming I'm a patient, you are telling me this is a risky operation, et cetera. My question to you is: what if I asked you the other part of the equation? *Supposing I don't do it, what are my chances of survival? Is a surgeon able to answer that part of the question?*

A. *No, it is very difficult to answer, and a lot of patients ask that very same question and my standard answer is that I don't have a crystal ball*. I can't predict your future, and in that sense I can sympathise with the patient when he says, "I'm between a rock and a hard place," because as a surgeon I'm also feeling in that position. Whatever way I choose, there are equally bad potential outcomes, but I think at the end of the day, as long as that's explained to the patient, his options, and the potential outcomes in either option, and he decides on which course of action, being informed in that regard, that is my duty.

[emphasis added] [note: 38]

106 I find the question of MS' chances of survival without going ahead with the redo-CABG simply an imponderable. The plaintiff's experts who said that MS should not have gone ahead with the redo-CABG candidly accepted that a subsequent AMI might happen "out of the blue". It was common ground that MS had severe coronary artery disease and it was thus not uncontroversial that a subsequent AMI might well have killed him. The plaintiff's experts did not put a figure to the chances of that happening and I take it that they could not. If they could put forward such a figure and show it to be significantly lower than the risk MS faced in undergoing the redo-CABG, then Dr Tong would have breached his duty to MS. However, it is precisely on medical imponderables such as the present question that the medical community is allowed to have legitimate disagreements without interference by the judiciary. By definition, it is impossible to calculate imponderables and as stated at *Gunapathy* (at [3]), "We often enough tell doctors not to play god; it seems only fair that, similarly, judges and lawyers should not play at being doctors."

107 It must be emphasised that the plaintiff bears the burden of showing that the view held by Dr Tong was illogical. To this end, the plaintiff noted that one of Dr Tong's own experts, Prof Buxton, stated that he would not have done the redo-CABG himself:

A. *... I think an aggressive group of surgeons, and there's quite a lot of surgeons who are aggressive, would do that. There's a group of surgeons who would perhaps go in relatively early, after three or four days, which is the major risk over*, and, secondly, perhaps during that time maybe consider a further test -- I think it's possible, yeah.

Q. Dr Buxton, do I understand from your evidence that if you were faced with such a patient, you would not have carried out a surgery so soon?

A. That would be my view, but I'm not -- I can't speak for every surgeon.

[emphasis added] [note: 39]

However, it is clear that Prof Buxton was of the opinion that there was a sizeable group of surgeons who would have operated as Dr Tong did, and while he characterised them as "aggressive", that adjective is quite distinct from "illogical".

108 The plaintiff then relied on the following excerpt from *Gunapathy* (at [65]) and submitted that since Prof Buxton would not have proceeded with the redo-CABG himself, his medical opinion was not internally consistent and should be rejected:

> ... To our minds, a "defensible conclusion" connotes the satisfaction of two concepts. First, the medical opinion must be internally consistent on its face. It must make cogent sense as a whole, such that no part of the opinion contradicts with another. *A doctor cannot say, for example, that he supports a certain approach and attest that in that very situation, he would nevertheless have done quite the opposite*. ...
>
> [emphasis added]

109 With respect, I think that is a misreading of *Gunapathy*. The fact that a doctor acknowledges the practice of one group of doctors while stating that he would have opted for a different course does not of itself cause his opinion to become inconsistent. The correct position, in my view, is that an expert can provide evidence of what practices are accepted as proper by a responsible body of medical men by stating his view of what he believes other doctors would have done (even if he would not himself have adopted that course). This is supported by the case of *Sharpe v Southend HA* [1997] 8 Med LR in which Cresswell J stated at 303 (col 2):

> An expert witness should make it clear in his/her report (if it be the case) that although the expert would have adopted a different approach/practice, he/she accepts that the approach/practice adopted by the defendant was in accordance with the approach/practice accepted as proper by a responsible body of practitioners skilled in the relevant field. Had this guideline been followed in the present case it is likely that the allegations against Professor Souhami would not have been advanced in the first place (as opposed to being withdrawn in the plaintiff's counsel's final speech).

110 Therefore, applying the *Bolam* test and after considering the evidence and arguments presented by both sides, I find that Dr Tong was not negligent in recommending that MS undergo the redo-CABG because he had acted in accordance with a practice accepted as proper by a responsible body of medical men skilled in that particular art. I also find that the medical opinions supporting Dr Tong were held on a logical basis and satisfy the *Bolitho* test. In so finding, I find it apposite to recall this passage from Lord Diplock's speech in *Sidaway v Board of Governors of the Bethlem Royal Hospital and the Maudsley Hospital* [1985] AC 871 (" ("*Sidaway*") at 893:

> Those members of the public who seek medical or surgical aid would be badly served by the adoption of any legal principle that would confine the doctor to some long-established, well-tried method of treatment only, although its past record of success might be small, if he wanted to be confident that he would not run the risk of being held liable in negligence simply because he tried some more modern treatment, and by some unavoidable mischance it failed to heal but did some harm to the patient. *This would encourage "defensive medicine" with a vengeance*. The merit of the Bolam test is that the criterion of the duty of care owed by a doctor to his patient is whether he has acted in accordance with a practice accepted as proper by a body of responsible and skilled medical opinion. There may be a number of different practices which satisfy this criterion at any particular time. These practices are likely to alter with advances in medical knowledge. ...

Of course, a redo-CABG could not be considered "more modern treatment" but the point is that the court should not bind doctors to conservative approaches in medicine as this would ultimately be to the detriment of patients. Otherwise, there might be a chilling effect on the prescription of more "aggressive" and/or interventional procedures, even if these are reasonably thought to be in the best

interests of the patient.

111 It remains for me to make an observation that the plaintiff appeared to have been given notice that Dr Tong would adopt an aggressive medical approach before she consulted him. This surfaced when the plaintiff was cross-examined regarding the advice given to her by Dr Christopher Chew:

> Q. At what stage did Dr Chew inform you that he would seek the advice of a cardiothoracic surgeon?
>
> A. When we were actually in the [high dependency unit ("HDU")], I actually came out of the HDU to meet -- because -- I think other than family no-one is allowed really in the [HDU], apart from the medical personnel, and Steve's colleague Brent Fish had when he was informed that this had happened, so I came out of the HDU to meet him, and while we were talking outside of the HDU, because he couldn't go in, Dr Chew came out of door and that's when we were standing kind of like in the corridor, you know, so to speak, and at that point in time we asked him, you know, "What are the next steps?" I'm using this very loosely, of course. He said, "There are two options. One is for conservative medical therapy and the other one is to refer a surgeon." *At which time he also told me -- well, he told us when a surgeon is introduced, a surgeon would usually like to operate, because that's how it is*. Okay? So that's what he said to us, and he said, "Those are the two options." He said, With conservative medical therapy, obviously some of the possible consequences could be some more heart attacks, myocardial infarct, and at the same time it could be also fatal." ...
>
> [emphasis added] [note: 40]

The answer in italics could imply that, as a surgeon, Dr Tong was inclined to operate whatever the circumstances and thus did not properly consider MS's suitability for the redo-CABG and did not properly consider the non-surgical options of OMT and PCI, thus failing to meet the standard of care expected of him. However, I find that if the plaintiff had indeed understood Dr Christopher Chew's statement to mean that Dr Tong would perform the surgery, regardless of the circumstances and consequences, she would not have proceeded to consult Dr Tong. I believe that the plaintiff went ahead to consult Dr Tong with MS knowing that Dr Tong's approach would be aggressive and surgery-oriented, yet believing that this was within accepted medical practice and a course which MS should explore.

112 Having gone through the foregoing sub-issues and making the findings that I have made, I accordingly find that Dr Tong did not breach the tortious and contractual duties of care he owed to MS in his recommendation of the redo-CABG as a treatment option for MS.

Issue 2: Whether Dr Tong breached the tortious and contractual duties of care he owed to MS in advising MS regarding the redo-CABG

The applicability of Bolam to the issue of advice

113 The Court of Appeal in *Gunapathy* also considered the issue of the applicability of the *Bolam* test to advice, noting the different views taken on this issue in *Sidaway*. The *ratio* of *Sidaway* is not easy to determine, as each of the judges appeared to be taking slightly differing stances on the applicability of *Bolam*. One commentator has thus stated that "much rests on the subsequent interpretation of the case" (Jonathan Herring, Medical Law and Ethics (OUPS, 2nd Ed) p 150).

114 In *Gunapathy*, the Court's interpretation of *Sidaway* was as follows. Yong CJ noted the dissenting view of Lord Scarman that *Bolam* only applied to diagnosis and treatment and not advice. Yong CJ then pointed out that the majority of the House in *Sidaway* parted company with Lord Scarman on this issue. Lord Diplock, in the majority, stated (at 893) that the doctor's duty of care was "not subject to dissection into a number of component parts to which different criteria of what satisfy the duty of care apply, such as diagnosis, treatment and advice". A doctor's decision as to what risks a patient should be warned of was stated to be "as much an exercise of professional skill and judgment as any other part of the doctor's comprehensive duty of care" (at 895). Therefore, Lord Diplock opined that "no convincing reason has … been advanced … that would justify treating the Bolam test as doing anything less than laying down a principle of English law that is comprehensive and applicable to every aspect of the duty of care" (at 893). In *Gunapathy* (at [137]), the court noted that Lord Diplock had "entrenched the application of *Bolam* to advice in no uncertain terms". Lord Templeman was stated to have "effectively supported the *Bolam* test" even though he did not make specific reference to the test (*Gunapathy* at [138]). Yong CJ went on to state (at [141]) that "it was clear that Lord Bridge [with whom Lord Keith agreed] did not agree with Lord Scarman's dissenting view that it was for the court to determine what material risks a prudent patient was entitled to receive".

115 However, Yong CJ noted that Lord Bridge did carve a qualification into the *Bolam* test. The question of advice and risk disclosure should not be abdicated entirely to the medical profession. Yong CJ observed (at [141]) that Lord Bridge took the view that:

> if a risk was substantial and there was no cogent clinical reason why disclosure should not be made, the judge was at liberty to conclude that no respectable medical expert would have failed to make it.

This was seen by the Court of Appeal to be "a forerunner to the more general qualification made by *Bolitho*" (*Gunapathy* at [141]).

116 The Court of Appeal made clear that it rejected the trial judge's "unwarranted" (at [134]) interpretation of *Sidaway* as declining the view that the *Bolam* test applied to the issue of medical advice (see [142]). However, the court also clarified that it was not providing a conclusive ruling on the doctrine of informed consent since that issue was not fully vented in that case:

> 142 We would emphasise that this is not the appropriate place to address a fully argued appeal on the merits of a doctrine of informed consent. The issue did not arise in the submissions before us and we would not pronounce on it as such. We, however, feel compelled to address the judge's inexplicable assumption that *Bolam* had been unceremoniously evicted from the issue of medical advice, and to make the observation that were this argument ever to arise in our jurisdiction, it would find *Sidaway* ([57] supra) to be somewhat shaky ground on which to stand.

Nevertheless, what is important for the present purposes is that the Court of Appeal went on to affirm that the *Bolam* test applied to the issue of advice at [143]:

> 143 Accordingly, *in affirming that the Bolam test applied to the issue of advice in the present appeal*, we found that the defendant doctors' disclosure of the relevant percentage risks of radiosurgery was *supported by a respectable body of medical opinion*. They had not given negligent advice to Gunapathy.
>
> [emphasis added]

The plaintiff's proposed test for the issue of advice

The plaintiff's proposed test for the issue of advice

117 While counsel for the plaintiff appears to accept that *Bolam*, subject to the *Bolitho* caveat, applied to advice, his submission of what the *Bolitho* threshold of logic entails might result in a departure from the *Bolam* test in effect. According to the plaintiff, if the doctor failed to communicate a significant risk to the patient before carrying out the recommended treatment, this would fail to meet the *Bolitho* threshold of logic and such a failure "would [be] tantamount to the conduct being illogical, irresponsible or unreasonable" and thus amount to a breach of the doctor's duty of care.

118 The plaintiff derived this argument from what she saw as the English approach of using *Bolitho* as "providing sufficient ammunition to the courts to scrutinise and find liability" even when Dr Tong attempted to adduce evidence that his practice conforms to the practice of a respectable body of practitioners. To illustrate this, the plaintiff referred to the decision in *Pearce v United Bristol Healthcare NHS Trust* [1999] ECC 167 ("*Pearce*") where Lord Woolf held (at [21]):

> In a case where it is being alleged that a plaintiff has been deprived of the opportunity to make a proper decision as to what course he or she should take in relation to treatment, it seems to me to be the law, as indicated in the cases to which I have just referred, that *if there is a significant risk which would affect the judgment of a reasonable patient, then in the normal course it is the responsibility of a doctor to inform the patient of that significant risk*, if the information is needed so that the patient can determine for him or herself as to what course he or she should adopt.
>
> [emphasis added]

119 The plaintiff noted that *Pearce* was characterised by some commentators as being closer to the "reasonable patient" test in the Australian case of *Rogers v Whitaker* [1992] 175 CLR 479 ("*Rogers*") than to the traditional English approach which focuses on the "reasonable doctor", or more accurately, a "responsible body of medical opinion" (Jackson & Powell at paragraph 13-091). In *Rogers*, the High Court of Australia departed from the *Bolam* test (at least in respect of the duty to advise) in favour of the approach of the Supreme Court of Canada in *Reibl v Hughes* (1980) 114 DLR (3d) 1, holding (at 490) that a doctor had a duty to warn his patient of the material risks inherent in the proposed medical treatment. A risk was material if, in the circumstances of the case, (i) a reasonable person in the patient's position, if warned of the risk, would be likely to attach significance to it; or (ii) if the medical practitioner is or should be reasonably aware that the particular patient, if warned of the risk, would be likely to attach significance to it.

120 Later, in *Rosenberg v Percival* [2001] 205 CLR 434, the High Court of Australia affirmed *Rogers* and reiterated that Australian law had moved away from the *Bolam* test in respect of the issue of advice. The plaintiff went on to note that the position adopted in Australia had found favour with the Malaysian courts, and referred to *Foo Fio Na v Dr Soo Fook Mun and Anor* [2007] 1 MLJ 593 ("*Foo Fio Na*"), where the Federal Court of Malaysia endorsed the *Rogers* approach in preference to the *Bolam* test.

121 The defence submitted that the plaintiff's reliance on the cases from other jurisdictions which showed a movement away from *Bolam* in respect of the issue of advice was misguided for the following reasons. First, some of the key authorities relied on by the plaintiff had already been expressly rejected by the Singapore High Court in *Surender Singh* (per Lai Siu Chiu J) on account that it was bound by the Court of Appeal decision in *Gunapathy*:

> 152 In recent times however, the *Bolam* approach has come under fire in several jurisdictions, most notably in Australia and Canada. In [*Rogers*], the High Court of Australia explicitly

rejected *Bolam* (at least in relation to the duty of disclosure and advice) in favour of the approach of the Supreme Court of Canada in *Reibl v Hughes* (1980) 114 DLR (3d) 1. Recent Malaysian decisions have also followed the Australian approach and in [*Foo Fio Na*], the Federal Court finally rejected *Bolam*, preferring *Rogers* as the applicable test for assessing all forms of medical negligence.

1 5 3 *However, the law as it stands in Singapore and that which will be applied in this judgment, is Gunapathy's case*, [the Court then proceeded to read key paragraphs of *Gunapathy*, which have been set out earlier in this judgment, emphasising that the applicable test is the *Bolam* test as qualified by the *Bolitho* test of logic]

[emphasis added]

122 Second, the highest the plaintiff had put her case was that there appeared to be a reluctance in the English courts in more recent years to apply *Bolam* and the majority view in *Sidaway*. However, the defence noted that in *Pearce*, the court had expressly applied *Sidaway*. In this regard, I also observed that notwithstanding his language which appeared to lean towards defining liability by reference to the reasonable patient, Lord Woolf expressly accepted as law (at [18]) a passage of Lord Templeman's speech in *Sidaway* which emphasised the problems of providing a patient with too much information:

Lord Templeman did not adopt quite the same approach as either Lord Scarman or the majority, but his speech is particularly relied upon by Mr Richardson. I bear that in mind, but I would merely refer to one short passage at page 904:

> "If the doctor making a balanced judgment advises the patient to submit to the operation, the patient is entitled to reject that advice for reasons which are rational, or irrational, or for no reason. The duty of the doctor in these circumstances, subject to his overriding duty to have regard to the best interests of the patient, is to provide the patient with information which will enable the patient to make a balanced judgment if the patient chooses to make a balanced judgment. A patient may make an unbalanced judgment because he is deprived of adequate information. *A patient may also make an unbalanced judgment if he is provided with too much information and is made aware of possibilities which he is not capable of assessing because of his lack of medical training, his prejudices or his personality."*

While recognising that Lord Templeman's approach is not precisely that of the majority, *it seems to me that that statement of Lord Templeman does reflect the law* and does not involve taking a different view from the majority.

[emphasis added]

123 Further, although cases like *Chester v Afshar* [2005] 1 AC 134 ("*Chester*") suggested that the perspective of a reasonable patient should be adopted, this case did not assist the plaintiff. *Chester* was a case on causation and not the duty and standards of advice and the comments on the standard of care were thus *obiter*. Even so, it must be remembered that *Bolitho* was also a case on causation and the important *obiter* remarks have been widely accepted as supplementing the *Bolam* test on breach of duty. More pertinently, the comments in *Chester* may not be applicable in Singapore, as the judgment's emphasis on human rights and autonomy might be attributed to the binding effect of the European Convention of Human Rights on the English courts pursuant to the Human Rights Act 1998, which Singapore is not bound by.

124 The plaintiff's characterisation of the threshold of logic looks like an attempt to abolish *Bolam's* applicability to the issue of advice. This is at odds with the Court of Appeal's decision in *Gunapathy* which makes it clear that the *Bolam* and *Bolitho* jurisprudence applies to the issue of advice. *Gunapathy* is binding on me. I do agree with the plaintiff that if the medical profession illogically omits to warn of certain risks which patients should undoubtedly be informed of, then the court should interfere on the authority of *Bolitho*. In this regard, I turn to a passage from the speech of Lord Bridge in *Sidaway* (at 900), where he was one of the majority judges:

> But even in a case where, as here, no expert witness in the relevant medical field condemns the non-disclosure as being in conflict with accepted and responsible medical practice, *I am of opinion that the judge might in certain circumstances come to the conclusion that disclosure of a particular risk was so obviously necessary to an informed choice on the part of the patient that no reasonably prudent medical man would fail to make it*. The kind of case I have in mind would be an operation involving a substantial risk of grave adverse consequences, as, for example, the ten per cent. risk of a stroke from the operation which was the subject of the Canadian case of Reibl v. Hughes, 114 D.L.R. (3d) 1. *In such a case, in the absence of some cogent clinical reason why the patient should not be informed, a doctor, recognising and respecting his patient's right of decision, could hardly fail to appreciate the necessity for an appropriate warning*.
>
> [emphasis added]

Lord Bridge went on to find for the defendant, accepting the evidence of the medical experts.

Sub-issues relating to the pre-operative advice given by Dr Tong to MS regarding the redo-CABG

125 As stated earlier, the doctor's duty of care is comprehensive, and all references to the "duty to advise" are to be understood in light of the comprehensive duty. It is trite law that before a doctor performs procedures on a patient, the patient should be advised on his medical condition, alternative treatment options, the nature of the treatment options and the respective benefits, risks and possible complications of each treatment option.

126 The plaintiff's written submissions concentrate on the advice given on (i) the mortality and morbidity risks of the redo-CABG, and (ii) whether MS was informed that his improving health provided him with an option to postpone. The plaintiff has highlighted several specific issues which she argues should have been communicated to MS and these are tabulated as follows:

	Nature of advice	**The plaintiff's position**
a	Risk of mortality *in percentage terms*	This is a significant matter concerning risk assessment that ought to have been communicated to MS. No advice was given to MS on this. Moreover, Dr Tong's estimate of a 3% mortality risk was not a reasonable figure as it was too low.
b	Risk of mortality	The risk of mortality associated with a redo-CABG is a significant risk that ought to have been communicated to MS. No advice was given to MS on mortality risk at all.

c	Risk of morbidity	The risk of *all* the serious morbidities ought to have been communicated to MS. Dr Tong only advised MS on the risk of bleeding, small risk of stroke, and possibility of the re-occlusion of grafts.
d	Risk in undergoing a redo-CABG so soon after an initial CABG; and in the immediate aftermath of an AMI	This risk ought to have been specifically communicated to MS. No advice was given to MS on this. The very recent AMI still posed a significant risk which ought to have been communicated to MS. No advice was given to MS on this.
e	The option to postpone the redo-CABG on account of MS's improving health	The redo-CABG was very risky on the account of its timing, and MS ought to have been informed of the significance of his improving health, and that it provided him with an opportunity to delay the surgery. No advice was given to MS on this.

127 It is pertinent to make three preliminary points. First, as noted, it was not disputed that MS signed a consent form on 11 March 2007, prior to the redo-CABG. However, the mere signing of a form in itself did not show that Dr Tong had not breached his duty to advise MS.

128 Second, there is generally no requirement for doctors to explain risks which an average person is ordinarily aware of or which the particular patient has knowledge of ("pre-existing knowledge"). (See the Saskatchewan first instance decision of *Haughian v Paine* 1986 CarswellSask 184, overruled but not on this point.) Once the patient understands certain information, there may be no further need for the doctor to provide the self-same information. Therefore, the standard of advice which the doctor should provide to his patient differs according to the pre-existing knowledge of the patient. However, Dr Tong would have breached his duty if he had not given MS any advice on the nature of a redo-CABG, its risks and alternatives but assumed that MS had this information simply because he had recently undergone the initial CABG. In cross-examination, the plaintiff accepted that it was a fair assumption that Dr Tong did take steps to ascertain with MS that MS understood the risks and complications of a CABG:

> Q. I have to press this point with you, because it appears from the notes that there were far more than your affidavit statement cares go into. My suggestion to you is that at these discussions, at which many of them you were not present, options were given to Steve, risks were discussed, the procedure of CABG was discussed in detail -- not just once but several times -- and he had the opportunity with several doctors, not just Dr Tong, *so my suggestion you is that Steve was well aware of the options, he was well aware of the risk that CABG entailed and he knew what he was signing up for when he decided to proceed with the surgery; isn't that correct?*
>
> A. *Yes, that's a fair assumption*.
>
> [emphasis added] [note: 41]

However, while a redo-CABG and the initial CABG follow the same procedure, the risks of a redo-CABG are higher and this is not disputed by Dr Tong. The plaintiff claims that Dr Tong had a duty to advise MS on the higher mortality and morbidity risks of the redo-CABG.

129 The third issue also pertains to the pre-existing knowledge of the patient, in a situation where a patient is attended to by a team of medical personnel. Once a member of the team advises the patient of certain information and the patient understands such information, the patient can be said to have pre-existing knowledge of such information with the effect that the other members of the team need not repeat the same information to the patient. In the instant case, Dr Tong was one of a team of doctors attending to MS ("the Medical Team"). Dr Tong testified that when he received a referral from a cardiologist, Dr Christopher Chew in this case, he would work as a team with the cardiologist. [note: 42] The Medical Team comprised Dr Tong, a cardiothoracic surgeon, Dr Christopher Chew, a cardiologist and Dr Suelyn Chew, an anaesthetist. The defence noted that there were at least 12 instances of communication between MS and the Medical Team, six of which were with Dr Tong and Dr Christopher Chew.

130 The defence went on to contend that MS had ample opportunity to ask his doctors for more information if he felt that such information was needed. While accepting that MS could indeed have requested more information, I must reiterate that the onus remains on the doctor to provide advice, regardless of whether the patient asks any questions. The onus is not, and cannot be, on the patient to obtain information by asking questions. The reason for this is self-evident: a patient who does not know what information he does not know will not be able to ask for such information. To require otherwise would be to put the patient in an impossible position. Guideline 4.22 of the Singapore Medical Council ("SMC") Ethical Code and Ethical Guidelines affirms that this is the position in Singapore:

> 4.2.2 Informed consent
>
> *It is a doctor's responsibility to ensure that a patient under his care is adequately informed* about his medical condition and options for treatment so that he is able to participate in decisions about his treatment. If a procedure needs to be performed, *the patient shall be made aware* of the benefits, risks and possible complications of the procedure and any alternatives available to him...
>
> [emphasis added]

131 While the SMC Guidelines do not impose civil liability on the doctors, they provide evidence as to the position taken by a reasonable body of medical opinion.

Sub-issue 2a: Whether Dr Tong's failure to advised MS of the mortality risks in percentage terms amounted to a breach of duty

A preliminary issue: prejudice

132 Dr Tong's pleaded case was that he had informed MS that the mortality risk of a redo-CABG was about 3%. Further, Dr Tong claimed that it was "reasonable to advise of a 3% mortality risk on the basis of [his] knowledge and experience". [note: 43] Moreover, there was contemporaneous written evidence that MS had been advised of the 3% risk, *viz*, the Clinician's Notes, where Dr Tong recorded that the "usual OP risk of 3% for redo CABG + small risk of stroke [was] discussed". Therefore, the plaintiff's and defendant's experts prepared their reports on the basis that the figure of 3% was conveyed to MS.

133 However, during cross-examination, Dr Tong stated that he had in fact *not* related the specific percentage figure to MS. [note: 44] His explanation for the record in the Clinician's Notes was that the

figure of 3% was his estimated risk, which he had recorded for his own purposes. Dr Tong's case during trial was that he informed MS that the risks of the redo-CABG were "significantly several times more, higher than first-time operation". [note: 45]

134 The plaintiff's position is that this statement during the hearing was one that was made "to everyone's surprise". The plaintiff argues that Dr Tong's new position at trial, *viz*, that what was communicated to MS was *not* 3% mortality risk but that the redo-CABG was many times riskier than primary CABG - is a distinct and new case. Thus, according to the plaintiff, Dr Tong should not be allowed to depart from his pleaded case that a 3% mortality risk had been communicated, as this would cause her to be unfairly prejudiced.

135 Prior to the defendant's evidence in court that he had not communicated the 3% figure to MS, the issue of mortality risks had been framed as a question of whether the *quantum* of 3% was a reasonable one. Following the revelation that no specific percentage had been communicated to MS at all, the plaintiff's argument turned to Dr Tong's duty to advise MS which would require him to quantify for MS the redo-CABG's mortality risks in percentage terms. The plaintiff's experts were questioned on the basis that the 3% risk had been communicated. The issue of whether it was reasonable for the doctor to communicate a specific percentage figure at all had not been raised and the plaintiff's experts thus had no opportunity to give their opinions on the matter. The plaintiff stated that had she been informed of Dr Tong's change in position earlier, she would have asked her experts to file supplementary affidavits on this specific point and her preparation of the case would have been different.

136 The plaintiff further asserted that this change in position called into question the veracity of the medical notes and Dr Tong's credibility. On the face of it, the wording recorded in the Clinician's Notes seems to suggest that MS was advised specifically of the 3% risk and the statement that no such advice was given deviates from the contemporaneous evidence. The fact that the contemporaneous evidence was not an accurate record on this one point might leave doubts as to its evidential value.

137 The plaintiff also argued that Dr Tong had asserted the positive case that he had informed and reasonably advised the late MS that the risk of mortality was 3%. Therefore, the burden was on Dr Tong to prove his positive case and he had clearly failed to do so.

138 In response, the defence countered that there were no grounds for the plaintiff to argue that Dr Tong had changed his position. Dr Tong's case was framed in terms of advising MS of the higher risks of a redo-CABG as opposed to an initial CABG, rather than giving MS the figure of a 3% mortality risk. While I accept that Dr Tong's pleaded case was that he informed MS of the higher risks of a redo-CABG, paragraph 11 of the defence clearly states that:

> Dr Tong warned MS (Milakov) that the mortality risk of a redo-CABG was about 3% (higher than initial CABG), and that there was also a small risk of stroke...

Further, at paragraph 25(2) of the defence, Dr Tong averred:

> (2) ... Dr Tong further avers it was reasonable to advise of a 3% mortality risk on the basis of Dr Tong's knowledge and experience;

It can be seen clearly that Dr Tong's pleaded case was that he warned MS that the risk of the redo-CABG was higher *and* that he had warned MS of the 3% mortality risk in a redo-CABG. It is thus unsurprising that preparations for trial proceeded on the common ground that the figure of 3% was

conveyed to MS. This was the view of the plaintiff and it was shared by the experts on both sides.

139 Even so, I respectfully disagree that the plaintiff would be unfairly prejudiced. I begin by observing, as Dr Tong rightly pointed out to me, that it was the plaintiff who first raised the 3% figure in her statement of claim ("SOC"). Paragraph 21 of the SOC states:

> 21 Milakov Steven and the Plaintiff were led to belief [*sic*] by Dr Tong that re-do coronary artery surgery did not carry with it any special risks. *The only information they received form Dr Tong was that there was a 3% risk of the surgery not being successful*. Neither were Milakov Steven or the Plaintiff aware of serious complications and/or risks associated ...
>
> [emphasis added]

The 3% figure appeared again under the particulars of breach at paragraph 29(b) (for negligence) and paragraph 32(b) (under contract). Paragraph 29(b) reads:

> b. He breached his duty of care when he misinformed Milakov Steven that the re-do coronary surgery that he recommended only carried a very small operative risk of 3% of the surgery not being successful. This information was not only wrong but was wholly inadequate;

The corresponding paragraph 32(b) reads:

> b. He breached the agreement when he misinformed Milakov Steven that the re-do coronary surgery that he recommended only carried a very small operative risk of 3% of the surgery not being successful. This information was not only wrong but was wholly inadequate;

140 The 3% figure was also found in the plaintiff's affidavit. At trial, the figure was even read from the affidavit to Dr Tong, who did not object to it.

> Q. If you go over the page to page 30, paragraph 56, you say: "*Steve and I were only informed that there a 3% risk that the operation might not be successful*. Dr MC Tong did not disclose about the increased mortality risks in connection with redo heart bypass surgery. He also did not disclose anything about the increased risk of undergoing redo heart bypass surgery so soon after the first bypass surgery or about the risks associated with undergoing surgery so soon after a heart attack or while suffering from diabetes."
>
> Again the assumption here, if you accept what I said earlier about the case notes and what Dr Tong is recorded as having said to Steve, particularly that risk in a redo is higher, and what Dr Chew said to Steve, which is that there is a chance of serious risk of dying, and what Dr Suelyn Chew said to Steve, which is there's a greater risk of perioperative bleeding, this statement would not be correct; do you agree?
>
> A. Well, I think this statement -- this statement here is qualified about the first bypass, about the risks associated with undergoing surgery so soon after a heart attack, or while suffering from diabetes. From my recollection of all those that you have referred to earlier, I don't think it takes into account these other factors that are stated here, if my recollection is correct.
>
> [emphasis added] [note: 46]

141 When Dr Tong stated at trial that he had not communicated the 3% figure to MS, counsel for

the plaintiff did not contest this. It is also clear from the plaintiff's written submissions that the plaintiff accepts that the 3% figure was not communicated to MS. How then did the specific figure of 3% manage to find its way into the SOC and the plaintiff's affidavit? I found this to be quite puzzling.

142 In addition, just as Dr Tong's change of position might be a reason to doubt the evidential value of the contemporaneous medical notes in proving what transpired between MS and the doctors, the plaintiff's change of position might be a reason to doubt the credibility of her claims. If the plaintiff did come to know of the 3% figure from Dr Tong, it would not do for her to say that she did not know of the percentage figure simply because Dr Tong said he never communicated it.

143 I add also that I believe the plaintiff's submission that Dr Tong carries the burden to prove the positive case which he asserted is misguided. If the SOC did not mention the 3% figure and simply accused Dr Tong not advising MS of the redo-CABG's mortality risks, then Dr Tong would be asserting a positive case if he denied that he did not advise regarding the mortality risks on the basis that he communicated the 3% risk figure. In that situation, I would hold that Dr Tong had the burden to prove that he did in fact communicate the 3% figure. However, the plaintiff's claim included both the accusation that Dr Tong had not advised MS adequately regarding the mortality risks *and* the accusation that the 3% figure which he did advise on was a negligent underestimation. In these circumstances, the defence to the plaintiff's claim was not exactly the assertion of a positive case since it may be understood as simply accepting the plaintiff's initial averment that the 3% risk figure was communicated.

144 Even so, since Dr Tong's position was that he never communicated the 3% figure to MS, he should not have accepted that he did so in the defence. It is also true that in the circumstances, the plaintiff was deprived of the opportunity to adduce evidence through her expert witnesses regarding the issue whether Dr Tong breached his duty to advise MS regarding the redo-CABG by not quantifying the risk for MS in percentage terms. However, while it would have been more helpful to have had more evidence presented on this specific point, I find that there is sufficient evidence before me on which I can base my decision. Although the plaintiff's experts did not have the chance to testify on this specific issue, the defence's experts did give convincing views which I will elaborate on when I move to consider the issue proper below.

145 The *Bolam* test simply requires that Dr Tong's practice relating to advice be affirmed by a body of responsible medical men skilled in his particular art. I will go on to demonstrate below that the evidence of Dr Tong's experts was satisfactorily affirmatory in that respect. I am also confident that any evidence which the plaintiff's experts might have provided, short of proving that Dr Tong's experts did not constitute a body of responsible medical men skilled in Dr Tong's art, would not change my finding in that regard. Therefore, I find that although the misleading nature of Dr Tong's averments up to the trial should be frowned upon, it did not prejudice the plaintiff in the outcome of this case.

146 For the record, I accept Dr Tong's testimony that he did not communicate the 3% risk figure to MS and that he had instead simply told MS that the risk of his redo-CABG would be "significantly several times more" than the initial CABG. I considered whether Dr Tong's change of position at trial might have been an expedient tactic due to his realisation after the plaintiff's experts gave their evidence that 3% was an indefensible underestimation of the redo-CABG's risk. However, Dr Tong did not abandon his position that the 3% figure was reasonable. He stated that the 3% figure was what was on his notes and in his mind when he communicated to MS that the risk of the redo-CABG was "significantly several times more" than the initial CABG. Since MS was dead, Dr Tong was the only person who could give evidence regarding exactly what he said to MS and I saw no advantage to be gained by deceit on his part, I therefore accept his evidence on this. It remains for me to add that, in

any event, I found that Dr Tong's 3% risk estimate was not negligently made (see paragraphs [83] – [88] above). As for how the plaintiff obtained the 3% figure for her claim, in the absence of a forthright explanation from the plaintiff, I can only conjecture that she had sight of some medical report or other in the aftermath of MS's demise which mentioned the figure.

Whether Dr Tong's failure to inform MS of the exact percentage figure of the risk amounted to a breach of duty

147 Moving on to the issue proper, Dr Tong's evidence at trial made it clear that he did not inform M S of the percentage figure of risk, and the plaintiff argued that this amounted to a breach of Dr Tong's duty to advise. First, the plaintiff argued that the standard practice in Singapore was to convey specific percentage figures of risks. In support, the plaintiff contended that if the issue of quantum was not important, Dr Tong would not have stated that he had informed MS of the 3% risk in his affidavit and that this figure was reasonable. This was characterised by the plaintiff as an admission that such communication ought to have been part of the scope of reasonable advice that was communicated to MS.

148 Further, the plaintiff noted that all the expert cardiothoracic surgeons who had given evidence during the hearing referred to various risks models which highlighted in percentage terms the risk of mortality and serious morbidity. The experts derived these figures from two international scoring systems, namely the EuroSCORE and STS. As noted earlier, these are well-recognised systems which are used, among other things, to provide a specific quantum of mortality risks. While the experts had disagreed on the *quantum* of the risk, they had all used percentage figures in their expert opinions. The plaintiff argued that if there was no established practice of providing an estimate of mortality risks in percentage terms, the experts would not have taken so much effort to address this issue in their respective expert opinions.

149 However, in my view, the extensive discussion of the 3% figure was a function of how the plaintiff's claim was framed in the first place. Dr Tong's pleadings which in all appearances affirmed that he communicated the 3% figure to the plaintiff contributed to the eventual melee at the centre of which was the issue of what the redo-CABG's risks should have been reasonably quantified as. That issue naturally led the experts to focus their discussions on percentages and risk scores. Having said that, I would accept that the doctors are familiar with how one can responsibly conceptualise risks in terms of percentages and that they have a standard practice of *considering* the risks in terms of percentage figures. Nevertheless, this does not necessarily mean that the doctors have a standard practice of *communicating* these percentage figures.

150 Ultimately, as I stated earlier, I found the expert evidence adduced by Dr Tong on this issue to be decisive. Prof Buxton stated in his written expert opinion (exhibited to his affidavit) the following (at paragraph 2.18) which I found extremely pertinent:

> 2.18 In MS's case, he had been informed of an estimated mortality risk of 3% in redo-CABGs. A 3% mortality risk is a significant risk of death which MS appeared to understand. It is also higher than the mortality risk of a first CABG. *In practice, many surgeons will not inform patients of the exact percentage or risk, and simply inform the patients that a redo-CABG comes with significant risk of death, higher than in a first CABG. Either case is acceptable*.
>
> [emphasis added]

151 I note in particular this written opinion was tendered before the trial *ie* before Dr Tong stated that he did not actually communicate a specific percentage to MS. Prof Buxton went on to testify

that in practice, many surgeons would *not* inform patients of the exact percentage of risk and would simply inform patients that a redo-CABG involved a significant risk of death, higher than that in an initial CABG. [note: 47]

152 I also had regard to Dr Sin's expert report (exhibited to his affidavit which was also tendered before the trial) which stated at paragraph 43:

> 43 It should be noted that a 3% risk of mortality, which means death during the surgery itself or in the immediate 30 post-operative days, *is a significant risk especially when it is highlighted as higher than in initial CABG which by itself is already a major procedure*. In my experience, a patient who has been warned of death, especially a significant 3% risk of death, would be well equipped to understand the high risk of the surgery which he is undergoing and to choose whether to undergo the surgery or not.
>
> [emphasis added]

Notwithstanding the second sentence of the said paragraph 43, the first sentence clearly implies that the significance of the risk is brought out not merely by the 3% figure but *especially* more so when it is highlighted as higher than an initial CABG. This provides convincing support for Dr Tong's case.

153 The plaintiff also argued that Prof Buxton was not familiar with local practice in Singapore and observed that Dr Sin, who practises in Singapore, believed that it was an established practice in Singapore to provide advice to patients awaiting a redo-CABG in terms of percentages of mortality (see [154] below). However, Dr Sin also testified regarding the difficulties in giving specific risk percentages and opined that to do so without a relative indication might not be helpful: [note: 48]

> Now, it's a problem whenever I talk to patients, because on some years we actually have zero mortalities in low risk CABGs, and unfortunately I cannot tell patients that, "Your mortality is zero." It is a major operation. It is a risky operation. All open heart surgeries are risky, much as my patients would like to hear me say, "There is no risk." ... So when you look at what is high risk, a lot of times we have to give a relative number to help. Some patients like a hard figure, but you would still like to have a benchmark, so in the case of a patient where I say, "Well, our usual risk is 2 to 3 per cent, and in your case your risk is 'usual'," then the patient understands that yes, there is a risk, but my risk is usual. On the other hand, if I were to tell a patient that your risk is 30 per cent, he has no reference – is this high or is this low?

154 When I pursued this matter with Dr Sin, he responded as follows [note: 49]:

> COURT: Are you saying therefore that as a matter of practice the surgeon should convey to the patient their mortality and morbidity risk in terms of percentage or otherwise?
>
> Dr Sin: *I think they should do both*, depending on how the patient can understand, if the patient is fully equipped to understand a percentage, *but I would still give a relativity, because it's like the price of a car -- here versus in Malaysia versus UK. They are all so different*. What is expensive and what is not? *You can't tell with just an absolute figure. So I always say you must have a relative benchmark, and the purposes of all this is really to benchmark* and help either the surgeon decides, what the patient decides, but the relationship is between the surgeon and the patient and what the surgeon thinks is a reasonable estimate.
>
> [emphasis added]

Therefore, while the plaintiff was right to note that Dr Sin did say that doctors should convey risks in terms of percentages, this was not an entirely accurate portrayal of Dr Sin's opinion. Dr Sin had repeatedly emphasised that it was more important to convey the risks in relative terms, rather than in absolute percentage figures.

155 In particular, Dr Sin also highlighted that giving MS an absolute figure might have been potentially confusing for MS since he might have tried to compare it with any absolute risk figures which SJMC gave to him: [note: 50]

> COURT: My point to you is, having that concession by Dr Tong, what would your opinion be since he did not tell Mr Milakov that the risk was 3 per cent?
>
> Dr Sin: I think the relative -- *the relativity is more important. It would have been nice to have an absolute figure*, but if the patient can't really have a reference point and I can also understand because SJMC didn't give a figure, *and if SJMC didn't give a figure and then we give a figure, the patient gets very confused, or if they give a figure and we give a different figure and ours may be even lower than theirs, depending on how they calculate it*, so usually if SJMC had given a figure, I would then say okay, as SJMC told you this risk, now for a redo we say it's at least three or four times, or whatever more times more, I'll then give you this figure so there is a consistency in how the risk is presented to the patient. So there must always be that *relativity, consistency and a benchmark in terms of where we reference a risk score*.
>
> [emphasis added]

156 I agree with Dr Sin that it is more important to convey the risks in terms of relativity rather than in terms of an absolute percentage figure. As seen above, risk figures are merely estimates and may legitimately differ to some extent. The percentages can vary widely depending on whether the EuroSCORE or the STS system is used, *viz* 14.34% and 2.3% respectively in this case. In particular, Dr Sin alluded to the disparity between the two systems:

> I can give that patient a EuroSCORE and he may freak out because it's so high, or I can give him an STS and he may not freak out because it's so low.

I note that the reluctance of expert medical witnesses to measure risks in percentage terms is not unique to the experts that were before me, as Lord Bridge had observed in *Sidaway* (at 900 – 901) that "some of the expert medical witnesses called expressed a marked and understandable reluctance" to "measure such risks in percentage terms".

157 I will now address the plaintiff's second argument, *viz*, that percentage terms would provide the patient with an easy reference to understand the risks of mortality. It would be easy for a reasonably intelligent person to appreciate that a 3% risk meant that three out of 100 patients would not survive the surgery. Even if there is no general legal requirement for doctors to provide risk estimates in percentage terms, this does not rule out the possibility that in some cases, the failure to discuss risks in percentage terms might amount to a breach of duty. In the instant case, it is uncontroversial that MS would have understood the implications of the percentage figure

158 While Dr Sin acknowledged as much and stated that "if the patient is fully equipped to understand a percentage", then it ought to be conveyed, there was nothing to suggest that the

positions of Prof Buxton and Dr Sin set out in their reports (in the quotations above) stating there was no need to communicate a specific risk percentage did not apply to patients who could understand the concept of a percentage risk figure. Indeed, thanks to the spread of numerical literacy in today's Australian and Singaporean societies in which Prof Buxton and Dr Sin practise, it is likely that the majority of patients would understand a risk percentage figure presented to them. Therefore, while it might be good medical practice to convey risks both in terms of relativity *and* in percentage figures, I find that there is a responsible body of medical opinion which supports Dr Tong's decision to convey the risks to MS only in relative terms, without a percentage figure.

159 Therefore, taking all the evidence into consideration, I find that Dr Tong's duty to advise MS did not behove him to present MS with a specific risk percentage. I found that by making clear to MS that the redo-CABG presented him with a risk that was "significantly several times more" than the initial CABG, MS was adequately impressed with the gravity of the decision he was being asked to make and the significance of the risk he was undertaking.

Sub-issue 2b: Whether Dr Tong informed MS about the risks of mortality associated with the redo-CABG

160 It is clear that the mortality risks associated with a redo-CABG are higher than those of an initial CABG. In the instant case, in addition to being riskier than an initial CABG, the particular redo-CABG that MS was to undergo was also riskier than a 'normal' redo-CABG for the following reasons:

(a) The two proximities in time

i. The proximity in time between the redo-CABG and the initial CABG ("the first proximity in time")

ii. The proximity in time between the redo-CABG and the AMI suffered by MS ("the second proximity in time")

(b) MS's history of diabetes mellitus and hypertension.

The plaintiff asserts that Dr Tong ought to have specifically advised MS of the two proximities in time. This assertion will be dealt with later in the judgment. I will first examine the general issue of whether the risk of mortality associated with a redo-CABG was discussed at all, before moving to the specific issues on the increased risks of the particular CABG that MS was to undergo.

161 There is a factual dispute on whether the mortality risks were disclosed. It is important to observe that it is not the plaintiff's case that Dr Tong had to advise MS that the mortality risks in a redo-CABG were *higher* than that of an initial CABG. The plaintiff's case is that the risk of mortality in a redo-CABG was a significant risk and that Dr Tong did not disclose this risk to MS; she does not argue that the relativity of the risks between a redo-CABG and an initial CABG need to be specifically highlighted. It was Dr Tong who brought up the point on relativity, as he asserted that he had advised MS that the risks of mortality and complications in a redo-CABG were several times higher than those of an initial CABG.

162 The onus is on the plaintiff to demonstrate, on a balance of probabilities, that the risks of mortality associated with a redo-CABG were not disclosed and not on Dr Tong to show that he had advised MS that the risks of mortality in a redo-CABG were higher than that of an initial CABG. The plaintiff argues that "[i]f Dr Tong did not warn the late Milakov about the risk of mortality as pleaded in the Defence, one would have to fall back on the case of the Plaintiff that Dr Tong did not advise Milakov about the risk of mortality at all". I respectfully disagree with the plaintiff on this point. It is incorrect to state that there are only two possible factual scenarios, namely, that MS was advised of a 3% mortality risk or that MS received no advice on the risk of mortality at all. The evidence will be examined to determine what advice, if any, was given to MS on the increased mortality risks of the redo-CABG as compared to his initial CABG.

163 I will first examine the contemporaneous evidence. There are two main sources of contemporaneous written evidence. The Clinician's Notes (a joint record compiled by the members of the Medical Team) and the Clinical Summary furnished by M. C. Tong Cardiothoracic Surgery Centre ("the Clinical Summary") and Dr Tong's personal notes. As stated earlier, Dr Tong made an entry in the Clinician's Notes on 9 March 2007 at 12.00 noon that the "usual OP risk of 3% for redo CABG + small risk of stroke discussed", though Dr Tong subsequently conceded that the figure of 3% was never conveyed to MS. In the Clinical Summary, Dr Tong recorded that the "usual op risk of stroke and bleeding in redo-op is higher".

164 It must be noted that on the face of it, the record did not say that this risk was *communicated* to MS. The plaintiff also pointed out that Dr Tong's Clinical Summary made no reference to mortality risks but only referred to stroke and bleeding. Therefore, the contemporaneous medical notes appear to support the plaintiff's case that there was no disclosure of mortality risks.

165 I will now turn to the recollection of the parties as to what advice was given during the consultations.

Dr Tong's consultation with MS on 9 March 2007 at 12.00 noon

166 Dr Tong stated that during this consultation, he had "emphasised to MS that a redo CABG had a much higher risk of mortality and other possible complications. [He] informed MS that the mortality risk was higher than the first CABG...". [note: 51] Dr Tong also asserted that he was aware of MS's "history of borderline diabetes mellitus and hypertension, [and] advised him that these conditions, if not under medical control, [might] put him at greater risks compared with a patient who did not have these conditions". [note: 52]

Dr Christopher Chew's consultation with MS on 9 March 2007 at 12.55pm

167 This review took place shortly after MS's discussion with Dr Tong. Dr Christopher Chew stated that while he could not recollect exactly what was said at each discussion, at this particular consultation, MS explained to him that Dr Tong had recommended a redo-CABG. Dr Christopher Chew opined that "MS was well aware that there was a serious risk that he could die from the redo-CABG itself, and that there were risks of complications". Further, Dr Chew asserted that he affirmed his agreement with Dr Tong's assessment of the risks involved in the redo-CABG.

Dr Tong's consultation with MS on 10 March 2007

168 Dr Tong claims that he "reiterated that there was a higher risk of mortality ... in a redo-CABG as compared to an initial CABG". [note: 53]

Dr Christopher Chew's consultation with MS on 10 March 2007

169 Dr Christopher Chew admitted that he could not recollect exactly what was said during this discussion but stated his belief that he went through the matters previously discussed, "including the risks, procedure and pros and cons of a redo-CABG...". [note: 54] It must be noted that Dr Christopher Chew made no reference to *mortality* risks specifically.

The plaintiff's arguments

170 The plaintiff acknowledges that she does not have the evidence of MS to counter what Dr Tong claimed he had communicated to MS. However, she asserts that based on the contemporaneous evidence, there is nothing to suggest that the issue of mortality was discussed with MS. Further, she notes that Dr Christopher Chew had conceded that he was not able to recollect the communications between MS and himself. He also did not claim to know the specific issues relating to mortality in a redo-CABG.

171 Counsel for the plaintiff also asserted that even though MS met with the Medical Team on 12 occasions, this fact was neither important nor relevant, as the only person who could have communicated the risk of mortality associated with the redo-CABG surgery was the cardiothoracic surgeon on the Medical Team, *ie* Dr Tong. I respectfully disagree with counsel for the plaintiff on this issue. To state that only Dr Tong could give advice on the risks of the surgery ignores the reality of how a Medical Team works in practice. It would also lead to unwanted repercussions, where each doctor has to run through all the risks of a procedure, leading to inefficiencies and an ultimately reduced quality of care.

Finding

172 As stated above, I accepted Dr Tong's evidence that he warned MS that the risks for a redo-CABG would be "significantly several times more" than those for an initial CABG. It is uncontroversial that MS met several doctors separately on several occasions. I recall the following passage from *Gunapathy* at [131]:

> 131 Accordingly, we found that the judge had manifestly erred in his findings relating to the advice rendered by the doctors. Given the incoherence of Gunapathy's testimony, there was no justification in refuting the consistent testimony of the three doctors who gave clear evidence that she had been informed of the relevant risks. *Furthermore, it must be borne in mind that Gunapathy was an educated person, with the presence of mind to seek confirmation by obtaining a second opinion. She had also been suffering under the spectre of brain cancer for more than a year. It seemed most unlikely that she would have allowed herself to be brushed aside with half-baked advice that radiosurgery was "simple" without more*. In the totality of evidence, we accepted the account given by the doctors that they had properly informed her of the risks inherent in radiosurgery.

173 Of course, MS did not seek a second opinion in this case but he and the plaintiff were clearly educated persons and I find it hard to believe that they did not discuss the possibility of death with any of the doctors during any of those consultations. Even if they did not, I also find it difficult to believe that MS did not appreciate that the CABG surgery in Houston carried with it the risk of death. The CABG is open heart surgery which involves sawing through the sternum and interfering directly with the heart. Surely, MS must have appreciated that the operation might not go well and that he faced a significant risk of dying. Having found that MS was told that he faced a risk that was

"significantly several times more" in respect of the redo-CABG, I have no trouble holding that he was adequately advised of the significant mortality risk which he faced.

Sub-issue 2c: Whether Dr Tong informed MS of the risk of all the serious morbidities

174 It is uncontroverted that Dr Tong warned MS of the risk of bleeding, a small risk of a stroke and the possibility of the re-occlusion of the grafts. That such risks were discussed appears clearly from the contemporaneous evidence. Dr Suelyn Chew, an anaesthetist, also documented her advice on the higher risks of bleeding perioperatively in the Clinician's Notes. However, the plaintiff asserts Dr Tong failed to warn MS of the possibility of serious infection, renal failure, liver failure, heart malfunction and multi organ failure and she claims that this amounted to a breach of Dr Tong's duty to advise MS. Dr Tong does not dispute that he did not, in fact, warn MS of the possibility of renal failure, liver failure, heart malfunction and multi organ failure. Dr Tong further stated on cross-examination that he only saw it necessary to advise MS on the primary and major complications:

> Q. -- you said nothing else to him about the risk factors associated with mortality or about morbidity?
>
> A. Well, this is -- already mortality is there, at 3 per cent is there. I mention all that to him, and the other medical complication which may or may not occur, which is only when the major difficulty intraoperatively occurred then other complication may be likely to occur. *So I don't see any point to point out everything to him*.
>
> [emphasis added] [note: 55]

175 Dr Tong also stated that he warned MS that the risks of complications would be "significantly several times more" than the initial CABG, which I accepted:

> Q. After consultation with whom?
>
> A. With Mr Milakov, but in actual -- I did not what is the -- in numbers – actual numbers. I said, *"Your operative mortality and complications is expected to be significantly several times more, higher than the first-time operation."* He nod his head, he understand.
>
> [emphasis added] [note: 56]

176 Nevertheless, the question is: does the doctor have a duty to warn the patient of all the major morbidities specifically? The defence argues that even though Dr Tong did not advise MS of *all* the serious morbidities, this did not amount to a breach of his duty. The experts called by the defence opined that it accorded with accepted practice not to list all the morbidities. Dr Sin agreed that the risks of major morbidities should be conveyed to the patients but that what ought to be conveyed was the "big headings" of risks. [note: 57] In his opinion, providing a comprehensive list of morbidities and their percentages would serve to confuse patients and might give a "false sense of risk". [note: 58]

177 The defence relied on *Sidaway*, where Lord Bridge opined on the duty to advice:

> There are, it appears to me, at least theoretically, two extreme positions which could be taken. It could be argued that, if the patient's consent is to be fully informed, *the doctor must*

specifically warn him of all *risks involved* in the treatment offered, unless he has some sound clinical reason not to do so. Logically, this would seem to be the extreme to which a truly objective criterion of the doctor's duty would lead. *Yet this position finds no support from any authority, to which we have been referred, in any jurisdiction*.

[emphasis added]

The defence thus argued that there is no requirement that all mortalities and morbidities must be advised and that a doctor is entitled to exercise clinical judgment in deciding the degree of disclosure of risks to convey, bearing in mind the objective of assisting the particular patient to make a rational choice as to whether or not to undergo the treatment in question. I accept this argument, as it accords with the clear position under Singapore law that *Bolam* applies to the duty to advice.

178 In this regard, I also considered the following passage from *Gunapathy* at [132]:

Two defence experts agreed that what the doctors had disclosed in their advice to Gunapathy was sufficient in the present case. *We did not find this opinion to be illogical, for, as explained by Prof Karlsson, the rationale should merely be that the patient understood the main risks of the operation*. Accordingly, on an application of the *Bolam* test to the issue of advice, the defendant doctors would not be liable in negligence.

[emphasis added]

I find that MS was aware that the redo-CABG might result in death and/or complications which would lead to morbidities, a few of which were specifically mentioned to him. Accordingly, I find that MS understood the main risks of the operation and Dr Tong did not fail to advise MS properly on the redo-CABG in this regard.

Sub-issue 2d: Whether Dr Tong was required to specifically inform MS of the increased risks due to the two proximities in time

179 With regard to the first proximity in time, as explained above, after the initial CABG, there would be scarring of the tissues in the chest and these tissues would be highly vascularised. A redo-CABG would thus involve heavier blood loss than an initial CABG. The freeing of the vascular adhesions between the heart and the breast bone and the pericardium and the heart during the redo-CABG would have resulted in a high degree of bleeding in MS's case, given that he had undergone the initial CABG only about 7 weeks prior to the redo.

180 It must be noted that it was the plaintiff's case that the redo-CABG had taken place within six weeks from the initial CABG but this appeared to be a calculation error. Nonetheless, nothing material turns on the discrepancy. The plaintiff emphasised that the proximity in time between a redo-CABG and an initial CABG was not a usual feature of a redo-CABG but was both very uncommon and very risky and thus needed to be specifically highlighted to MS.

181 With regard to the second proximity in time, Dr Sharma testified that operating after a patient had an AMI was an extremely risky proposition as it would involve stopping the patient's heart after part of it had died and asking it to restart again. [note: 59] Prof Buxton agreed that the two proximities would enhance and increase the risk of mortality and major morbidities. [note: 60]

182 The plaintiff claims that Dr Tong breached his duty to obtain informed consent as he failed to inform MS of the particular issue of the two proximities in time. She further claims that the two

proximities "compounded each other and had a cumulative effect in connection with elevating the risk factor in relation to mortality and major morbidity". This appeared to be acknowledged by Prof Buxton who opined that the risks of the particular surgery MS was to undergo would probably be at the "higher end of the range of risk modelling results", as it was uncommon to find a patient who has had "two bypass procedures within two months or six weeks and, secondly, has had an [AMI] prior to the [redo-CABG]". [note: 61]

183 I noted that the cases which the plaintiff cites in support of her claims, indeed, most of the landmark cases in this area of law, involve doctors being sued for the failure to warn of unlikely negative outcomes which ultimately occurred. In *Bolam*, the plaintiff underwent electroconvulsive therapy but was not warned that he might suffer a fracture, which he did. In *Sidaway*, the plaintiff underwent an operation to treat recurrent pain in her neck, right shoulder and arms. She was not warned of a risk of between 1 – 2 % that her spinal column might be damaged. The damage occurred and she became severely disabled. In *Rogers*, the plaintiff had lived almost forty years being almost totally blind in her right eye. She was not warned that surgery to help her injured right eye might affect her good left eye. This was despite the fact that she asked specifically whether her good eye might be affected. Tragically, the surgery caused her to develop a condition which led to the complete loss of sight in her left eye. In *Pearce*, the plaintiff who was fourteen days beyond her pregnancy term was advised by her doctor that medical intervention as not appropriate given the risks. However, she was not warned by her doctor that this would increase the risk of a stillbirth by 0.1 – 0.2 %. Unfortunately, the untoward event happened and the plaintiff sued. It must be noted that in all these cases, the patient sued the doctor for the failure to warn of specific morbidities that eventually occurred.

184 Turning to the present case, I have found above that that MS was adequately advised on the risk of mortality and morbidities. The plaintiff's complaint here is that MS was unaware that the two proximities would *increase* the mortality and morbidity risks of the redo-CABG and that he should have been advised of that. I have held that MS was warned that the risks of death and morbidities would be "significantly several times higher". I should think that, having been advised of the increased risks, the omission to advise specifically of *why* the risks would be increased was reasonable and did not amount to a breach of the duty to advise. Therefore, I find that Dr Tong's failure to warn MS specifically of the increase in risks *due to* the two proximities was not negligent.

Sub-issue 2e: Whether Dr Tong informed MS of the option to postpone the redo-CABG on account of MS's improving condition

185 The plaintiff claims that the option to postpone was never given to MS and that the first time Dr Tong mentioned the option was while he was preparing the defence. The plaintiff argues that MS was never advised of the significance of his improving condition, *ie*, that this improvement provided him with an opportunity to delay the redo-CABG, instead of going ahead on the scheduled date of 12 March 2007.

186 However, in the plaintiff's reply to Dr Tong's written submission, the plaintiff appears to concede that there was a discussion between MS and Dr Tong on the option to postpone the surgery:

> The discussion on the 10 March 2007 to postpone the surgery was merely an exercise Dr Tong embarked in wanting to confirm that Milakov's decision to proceed with the surgery as the Plaintiff had informed him the day before that Milakov was still unsure about going ahead with the surgery. The medical and clinical notes as well as the medical reports prepared by Dr Tong do not support his contention that he offered to delay the surgery because Milakov's health was

improving.

[emphasis original] [note: 62]

187 This seems to be a shift from the plaintiff's earlier position that the first time Dr Tong raised the issue about an opportunity to delay the surgery was when he prepared his defence to the case and that he had never given MS this discussion to postpone. As I understand it, the re-characterisation of the issue is that Dr Tong did offer the option to postpone the surgery but did not tell MS about the improvement in his health. The plaintiff claims that "what is important is not so much the discussion on postponement of RedoCABG but whether Dr Tong informed the late Milakov that his improving health required him to revisit the decision of RedoCABG Surgery on 12 March 2007" and that the "offer to postponing [*sic*] the surgery is one thing but providing the reason why the surgery can be safely postponed is quite another".

188 However, in the contemporaneous Clinician's Notes, Dr Tong recorded an entry on 10 March 2007 stating:

Have another talk with patients options of either to postpone or go ahead with the redo CABG on Monday [12 March 2007] discussed thoroughly. He decided to be operated on Monday. Feeling better today...

189 While this does not state that the option to postpone was offered to MS *because of his improving condition*, it is clear that Dr Tong was aware that MS's condition had improved. Dr Tong affirmed in his AEIC that MS's improved condition had a causal effect on the provision of the option to postpone: [note: 63]

In light of the improvement in his condition, I explained to MS that he could postpone the redo-CABG or proceed as scheduled on 12 March 2007. We had a thorough discussion about both options. I explained that he could consider postponement of the redo-CABG *as his improved condition reduced the urgency of an immediate redo-CABG* ... I asked MS if he had considered the pros and cons, and made up his mind on the redo-CABG, and to let me know if he had any other queries. He confirmed that he had decided to proceed with the redo-CABG on 12 March 2007, and that he had no other queries ...

[emphasis added]

190 Further, Dr Tong pointed out that the plaintiff's submissions contradicted her testimony in court. The plaintiff's submissions stated that the 10 March 2007 discussion regarding the postponement of the surgery took place because MS was unsure about the surgery at that stage and Dr Tong wanted to check if MS indeed wanted to proceed with the surgery. Therefore, the plaintiff said, it was not true that Dr Tong offered MS the option to postpone the surgery on the account that MS's health was improving.

191 However, the plaintiff's AEIC and court testimony made it clear that although MS was indeed undecided about the surgery on 9 March 2007, they had decided together on the surgery by the end of that day and she notified Dr Tong of it. The following excerpt is from the portion of the plaintiff's AEIC (at paragraph 24) describing the events of 9 March 2007:

After meeting Dr MC Tong, I returned to the ward where Steve was resting. At the ward, I informed Steve about my discussion with Dr MC Tong. I told him what Dr MC Tong told me. After a discussion with Steve, *we decided that it was in Steve's best interest to undergo surgery as*

planned on the 12 March 2007. I then contacted Dr MC Tong's clinic about our decision. We placed our full trust in him. ...

[emphasis added]

On cross-examination, the plaintiff stated:

Q. No, because you left Dr Tong's office on the 9th. Our understanding before lunch was that when you left it was on the assumption that you would go back to discuss it with Steve and then come to a decision.

A. Yeah, we made a decision. *I called Dr Tong's office and informed his staff that we would proceed with the surgery* [scheduled for 12 March 2007] *on the 9th*.

[emphasis added]

192 I find that MS did notify Dr Tong of his decision to proceed with the surgery on 9 March 2007. On 10 March 2007, Dr Tong recorded MS as "[f]eeling better today." I am satisfied that MS was also aware of the improvement in his health. Taking the evidence of Dr Tong and the plaintiff into account, I find that MS also understood that the improvement in his health was what precipitated Dr Tong's offer to postpone the redo-CABG.

Sub-issue 2f: Whether Dr Tong informed MS of alternative treatment options of OMT and PCI

193 Although the plaintiff did not really pursue her claim that MS was not adequately advised of alternative treatments in her written submissions, I state for the record my finding that alternative treatments were adequately advised. The need for information to be given on the alternative treatments is to allow the patient to be apprised of the relative risks and benefits of the available treatments to allow him to make an informed choice as to which treatment to undergo.

194 The three options typically available to patients who have suffered an AMI are OMT, PCI and CABG.

195 Dr Christopher Chew had told the plaintiff that he could not do a PCI for MS. This was borne out by the plaintiff's testimony on cross-examination:

Q. But the fact is you were told that whilst doing the angiogram he had considered and felt it was inappropriate to do a PCI.

A. He just plainly told me, "I couldn't do a PCI." [note: 64]

Therefore, it is clear that the plaintiff was told by MS's interventional cardiologist that PCI was not a viable option. Having accepted Dr Christopher Chew's medical view and confirming it with his own assessment of MS, Dr Tong was under no obligation to provide further advice on the PCI option. In other words, Dr Tong responsibly concurred with Dr Christopher Chew that PCI was not a viable alternative treatment. As stated earlier, a doctor is only under an obligation to provide advice on appropriate treatment options. Hence, his duty to provide advice on PCI was not engaged.

196 As for OMT, the plaintiff stated that she was advised on this by Dr Christopher Chew:

Q. At what stage did Dr Chew inform you that he would seek the advice of a cardiothoracic surgeon?

A. When we were actually in the HDU, I actually came out of the HDU to meet -- because -- I think other than family no-one is allowed really in the high dependency unit, apart from the medical personnel, and Steve's colleague Brent Fish had arrived when he was informed that this had happened, so I came out of the HDU to meet him, and while we were talking outside of the HDU, because he couldn't go in, Dr Chew came out of the door and that's when we were standing kind of like in the corridor, you know, so to speak, and at that point in time we asked him, you know, *"What are the next steps?" I'm using this very loosely, of course. He said, "There are two options. One is for conservative medical therapy and the other one is to refer a surgeon."* At which time he also told me -- well, he told us when a surgeon is introduced, a surgeon would usually like to operate, because that's how it is. Okay? So that's what he said to us, and he said, *"Those are the two options." He said, "With conservative medical therapy, obviously some of the possible consequences could be some more heart attacks, myocardial infarct, and at the same time it could be also fatal."* ...

[emphasis added] [note: 65]

197 Further, in Dr Tong's Clinical Summary, which was recorded contemporaneously with the relevant events, he noted that the "options of to continue conservative medical for ves RedoCABG soon if angina pectoris persisted explained to patient's wife and patient himself" [*sic*]. On the evidence, I am satisfied that MS was adequately advised on the alternative of OMT.

Causation

198 Even if, contrary to my view, Dr Tong was in breach of his duty to advise, the plaintiff's claim still fails because there was no causation. The Court of Appeal case of *Yeo Peng Hock Henry v Pai Lily* [2001] 4 SLR 571 ("*Yeo Peng Hock*") establishes that to succeed in a medical negligence claim, the plaintiff has to prove, on a balance of probabilities, that the alleged negligent act had *caused or materially contributed to the injury*. The court held in *Yeo Peng Hock*:

> 52 Thus, we find that the medical evidence was far from convincing or conclusive on the point whether, had Ms Pai gone to the SGH or SNEC on the evening of 23 December 1996, her left eye would have been saved. The burden of proof rests squarely on Ms Pai, and in our judgment, on the basis of the evidence given by Prof Cartwright and Dr Ang, Ms Pai had not discharged the burden of proving, on a balance of probabilities, that had Dr Yeo advised her to go to the SGH or SNEC immediately on the afternoon of 23 December 1996 and had she gone there that afternoon, her left eye would have been saved. She had therefore not proven that Dr Yeo's negligence and/or breach of duty caused or materially contributed to the loss of her vision in the left eye. On this ground, her claim cannot succeed.

199 I noted the plaintiff's submission that in *Chester v Afshar* [2005] 1 AC 134, the House of Lords held (at [24]) that justice required "a narrow and modest departure from traditional causation principles" to vindicate the claimant's right of choice and to provide a remedy for the breach. However, that is not the law in Singapore.

200 In the present case, the plaintiff is required to prove, on a balance of probabilities, that MS would not have opted for the redo-CABG if he had been provided the relevant information, namely, a

higher specific percentage risk, a comprehensive list of morbidities and an explanation that the two proximities would contribute substantially to the risks of the redo-CABG.

201 It was uncontroversial that MS had led an active lifestyle prior to suffering his first MACE. The plaintiff submitted that MS would not have opted for the redo-CABG if he had known the high risk of morbidities which the surgery entailed. She noted that if the morbidities eventuated, MS would find it more difficult to live the active lifestyle that he wished to. However, I find that that argument cuts both ways. MS was already leading a sedentary and rigorously medicated life before his AMI on 9 March 2007. After the AMI on 9 March 2007, I do not think he could have hoped for an active lifestyle without undergoing a successful redo-CABG.

202 I find that the plaintiff has not discharged her burden and thus her claim on the basis of inadequate advice fails on the ground of causation as well.

Decision: Dr Tong did not breach his tortious and contractual duties of care in advising MS regarding the redo-CABG

203 Having worked through the foregoing sub-issues and making the findings that I have made, I accordingly find that Dr Tong did not breach the tortious and contractual duties of care he owed to MS in advising MS regarding the redo-CABG. Admittedly, Dr Tong could have been more elaborate in his advice. However, on the evidence of his medical peers and in my analysis, he met the standard of care required of him.

204 Following *Gunapathy*, the question of the adequacy of medical advice is still largely within the scope of medical judgment (as long as it is not illogical); and I pause here to note that the plaintiff's testimony has suggested that she might not find it difficult to accept that in a doctor's responsible medical judgment, he might choose not to fully elaborate on all the potential negative consequences:

> Q. Did Dr Scheinin or Dr Kumar advise you that without this procedure there was a risk of a repeat incident of ischaemia and possibly a heart attack or AMI?
>
> A. Yes.
>
> Q. And that one of the risks of a recurrent AMI could be death; did you understand that?
>
> *A. Let me say that perhaps they look at things more on the brighter side instead of the negative aspects of it. Because when you are recommending somebody something that's obviously going -- which is to make them right, you wouldn't dwell on what are all the negative consequences*. I would say that the position that the doctors --
>
> Dr Scheinin took was, "This is my recommendation. I highly recommend that you do this surgery and that you do this surgery immediately, otherwise, you know, there could be consequences", which would obviously, you know, put you in a worse light, yes.
>
> [emphasis added] [note: 66]

Issue 3: Whether the technical aspects of the redo-CABG carried out on 12 March 2007 had been properly performed

205 In her SOC, the plaintiff highlighted several sub-issues regarding the specific steps Dr Tong took in the performance of the redo-CABG:

(i) Dr Tong failed to use retrograde cardioplegia to protect the functionality of MS's heart;

(ii) The redo-CABG was carried out for a very prolonged period and with cardiopulmonary bypass time of 333 minutes;

(iii) Dr Tong ought not to have harvested the RIMA as this added to the length of the surgical procedure and increased the complexity of the procedure unnecessarily;

(iv) Dr Tong ought not to have grafted the RIMA to the diagonal LAD system as this would not have done much in terms of coronary revascularisation and exposed MS to greater risk of infection from sternum wound infection; and

(v) Dr Tong ought not to have used the clotting agent, Activated Factor VII.

206 The plaintiff argued that, for the above listed reasons, Dr Tong's conduct of the redo-CABG was negligent. I will deal with each sub-issue in turn briefly because, as noted earlier, the plaintiff did not substantially pursue this third head of claim concerning the negligent conduct of the surgery during the trial or in her written submissions. Further, counsel for Dr Tong noted that Dr Blauth, one the plaintiff's experts, made no criticism of Dr Tong's conduct of the surgery and it was only Dr Sharma, the plaintiff's other expert witness, who had some criticisms.

Sub-issue 3a: whether Dr Tong ought to have used retrograde cardioplegia to protect MS's heart

207 The plaintiff argued that retrograde cardioplegia should have been used in preference to antegrade cardioplegia as this would have better protected MS's heart during the redo-CABG.

208 During the trial, counsel for the defendant tendered a document produced by the American College of Cardiology Foundation ("ACC") and the American Heart Association ("AHA"), the "ACC/AHA 2004 Guideline Update for Coronary Artery Bypass Graft Surgery", which states at 4.1.2.1:

> The wide latitude of techniques associated with excellent results for the majority of patients undergoing CABG is testimony to the fact that *there is no 'ideal' or universally applicable myocardial protection technique*.
>
> [emphasis added]

209 Even though Dr Sharma criticised the use of antegrade cardioplegia, he did not state that retrograde cardioplegia was *the only* reasonable method of protecting a patient's heart:

Q. Can you refer us to any material, either in terms of textbooks or literature, which show that retrograde cardioplegia is the only way in which one would achieve protection for myocardial functions?

A. *It's not all or none*. They're all additive and there are multiple techniques that can be employed to decrease the likelihood of poor myocardial protection. There are many articles on retrograde cardioplegia. I have a textbook written by my mentor that covers that, and I can send you copies, if you would like.

Q. *Does that say that retrograde cardioplegia is the only acceptable way to achieve protection for the heart function?*

A. *As I've repeated, there was no all or none phenomena*. There are incremental benefits to employing these techniques.

210 Therefore, even though Dr Sharma held the view that retrograde cardioplegia would have been a better form of treatment, he did not go so far as to say that the choice of antegrade cardioplegia was illogical. On a consideration of the evidence, and in particular the views of the ACC and AHA, I find that the decision to use antegrade cardioplegia was not negligent.

Sub-issue 3b: whether the length of time of the redo-CABG and the length of the cardiopulmonary bypass time indicated that the surgery was negligently carried out

211 MS's redo-CABG started at 9.00am and ended at 6.55pm on 12 March 2007, *ie*, the surgery lasted close to ten hours. During the surgery, MS was placed on the cardiopulmonary bypass for 333 minutes and the cross clamp time was 140 minutes.

212 It is uncontroversial that one of the factors which might cause sternal wound infection is the length of time spent on the cardiopulmonary bypass machine. However, as acknowledged by Dr Sharma, MS did *not* suffer any sternal wound infection.

213 Dr Sharma also conceded that the cross-clamp time of 140 minutes was not unusual. However, he opined that 333 minutes was a long time. I note here that Dr Christopher Chew, one of Dr Tong's factual witnesses, stated during cross-examination that "I guess the total bypass time of over 300 minutes is really quite a significant factor in the length of this operation". Even so, Dr Sharma accepted that he could not point to any specific action of Dr Tong during the redo-CABG which had led to the prolongation of time but stated that he was unable to do so as there was no dictated note. In the light of this concession, I find that the plaintiff has not satisfied the burden of proof of showing that the length of time *in itself* was indicative of negligent performance of the redo-CABG.

Sub-issue 3c and 3d: whether Dr Tong ought not to have harvested the RIMA and whether Dr Tong ought not to have grafted the RIMA onto the diagonal LAD system

214 I will deal with these sub-issues together. Under cross-examination, Dr Sharma accepted that the risk associated with using the RIMA, *ie*, the risk of sternal wound infection, did not materialise in this case. Therefore, while the harvesting and grafting of the RIMA might be contested, it is clear that nothing turned on the procedure.

Sub-issue 3e: whether Dr Tong ought not to have used Activated Factor VII

215 It was undisputed that MS suffered substantial bleeding perioperatively. It was also undisputed that in an attempt to achieve haemostasis, platelets and fresh frozen plasma were administered but the Medical Team found that these were not sufficient to satisfactorily manage the bleeding. Counsel for the defendant thus urged that the use of Activated Factor VII was reasonable, as the bleeding had to be managed. Dr Sharma's responses to questions under cross-examination is instructive in this

regard:

Q. So some other form of measure had to be taken to arrest the bleeding; right?

A. Yes.

Q. It would not have been reasonable to simply leave it alone; correct?

A. Correct.

...

Q: So let me put it to you again that the use of Activated Factor VII in this context was entirely reasonable. Do you agree?

A. Not being in the theatre, my preference is not to use this in non -- in coronary surgery patients. I think it causes graft thrombosis.

Q. But you have not offered any alternative to this case; correct?

A. No.

216 While Dr Sharma was adamant that the use of Activated Factor VII was not reasonable, he did not offer any alternative way to stop the bleeding. I take it that there was none. As it is undisputed that the bleeding needed to be managed and as there was no suggested alternative that could be used to achieve haemostasis other than Activated Factor VII, I find it extremely difficult to say that the use of Activated Factor VII was illogical. Therefore, I find that the Dr Tong did not breach his duty of care in using Activated Factor VII.

Decision: Dr Tong did not breach his tortious and contractual duties of care in the performance of the redo-CABG

217 Having discussed the foregoing sub-issues and making the findings that I have made, I accordingly find that Dr Tong did not breach the tortious and contractual duties of care he owed to MS in his performance of the redo-CABG. It remains for me to add that even the plaintiff's experts accepted that there was no evidence of any specific instances of wrongdoing in the redo-CABG. Accordingly, I find that Dr Tong met the standard of care required of him.

Costs

218 Until Dr Tong gave evidence during the trial, he had taken the position that he had communicated the 3% risk figure of the redo-CABG to the plaintiff. Accordingly, much time was spent at trial ascertaining with the aid of the experts whether the 3% risk figure was a reasonable figure to have been communicated.

219 Dr Tong's change of position also led to the plaintiff arguing that she was prejudiced by the same. Notwithstanding that the plaintiff's arguments failed, they were necessitated by Dr Tong's change of position. Therefore, while the plaintiff's claim fails, I am of the view that Dr Tong ought to be awarded only 85% of the costs of the action.

220 The plaintiff's action is accordingly dismissed and she is to pay Dr Tong 85% of the costs of defending the action.

[note: 1] 1 AB 14, History & Physical Examination Report on MS by Dr Douglas Koshin Burke, M.D., SJMC

[note: 2] 1 AB 19, Cardiac Catheterization Report by Dr Satheesha Kumar, M.D., SJMC

[note: 3] Slides for Dr Tong's Oral Opening, p 17

[note: 4] Slides for Dr Tong's Oral Opening, p 23

[note: 5] 1 AB 76 – 77, Cardiac Catheterization Report, DSA Room, Radiology Dept, MEH

[note: 6] Dr Blauth's affidavit at paragraph 8.

[note: 7] Dr Sharma's AEIC at paragraph 48

[note: 8] 4 AB 764

[note: 9] Transcript 19/4/11, p 33

[note: 10] Transcript 20/4/11, p 59

[note: 11] Transcript 19/4/11, p 8

[note: 12] Transcript 19/4/11, pp 47-48

[note: 13] Transcript 19/4/11, pp 11-12

[note: 14] Transcript 20/4/11, p 27

[note: 15] Dr Christopher Chew's AEIC, Plaintiff's Bundle of AEICs Volume 3 page 719

[note: 16] 1 AB 145

[note: 17] Transcript 7/4/11, pp 135-137

[note: 18] Transcript 20/4/11, pp 77-78

[note: 19] Transcript 7/4/11, p 37

[note: 20] Transcript 12/4/11, p 40

[note: 21] Transcript 20/4/11, p 50

[note: 22] Exhibit D1, p 359

[note: 23] Transcript 18/4/11, pp 20-21

[note: 24] 4 AB 764

[note: 25] Transcript, 12/4/11, p 69 – 70

[note: 26] Transcript 19/4/11, p 62

[note: 27] Transcript 18/4/11 p 68

[note: 28] Transcript, 12/4/11, p 71

[note: 29] Transcript 19/4/11, pp 31-32

[note: 30] Transcript 19/4/11, p 75

[note: 31] Transcript 20/4/11, p 79

[note: 32] Exhibit D-8

[note: 33] Transcript 18/4/11, p 99

[note: 34] Transcript 20/4/11, p 33

[note: 35] Defendant's Submissions at [157]

[note: 36] Transcript 19/4/11, p 64

[note: 37] Transcript 20/4/11, p 63

[note: 38] Transcript 20/4/11, pp 73-74

[note: 39] Transcript 19/4/11, p 100

[note: 40] Transcript 6/4/11, pp 86-87

[note: 41] Transcript 6/4/11, pp 117-118

[note: 42] Transcript 18/4/2011 p 28

[note: 43] Paragraph 25(2) of the defence

[note: 44] Transcript 18/4/11, pp 107 – 109, 111

[note: 45] Transcript 18/4/11, p 108

[note: 46] Transcript 6/4/11, pp 134-135

[note: 47] Transcript 19/4/11 p 104 – 105

[note: 48] Transcript 20/4/11 p 43 – 44

[note: 49] Transcript 20/4/11 p 69 – 70

[note: 50] Transcript 20/4/11 p 71

[note: 51] Dr Tong AEIC at [34]

[note: 52] *Id*.

[note: 53] Dr Tong AEIC at [46]

[note: 54] Dr Christopher Chew AEIC at [34]

[note: 55] Transcript 18/4/11 p 118

[note: 56] Transcript 18/4/11 pp 107-108

[note: 57] Transcript 20/4/11 p 66

[note: 58] *Ibid*.

[note: 59] Transcript 11/4/11 p 146

[note: 60] Transcript 19/4/11 p 73 – 74

[note: 61] Transcript 19/4/11 p 63

[note: 62] Plaintiff's Written Submissions at paragraph 74

[note: 63] Dr Tong AEIC [46] – [47]

[note: 64] Transcript 6/4/2011, p 81

[note: 65] Transcript 6/4/11, pp 86-87

[note: 66] Transcript 6/4/11, pp 64-65