IN THE HIGH COURT OF THE REPUBLIC OF SINGAPORE

[2018] SGHC 35

HC/Suit No 59 of 2015

Between

Noor Azlin Binte Abdul Rahman

… *Plaintiff*

And

(1) Changi General Hospital Pte Ltd
(2) Imran bin Mohamed Noor
(3) Yap Hsiang
(4) Soh Wei Wen, Jason

… *Defendants*

JUDGMENT

[Tort] — [Negligence] — [Breach of duty]

[Tort] — [Negligence] — [Causation]

CONTENTS

Noor Azlin Bte Abdul Rahman
v
Changi General Hospital Pte Ltd and others

[2018] SGHC 35

High Court — Suit No 59 of 2015
Belinda Ang Saw Ean J
17-20, 24-27 January, 1-3, 7-10 February, 7-9, 22, 31 March, 24-28 April, 10-11 July 2017; 19 October 2017

14 February 2018 Judgment reserved.

Belinda Ang Saw Ean J:

Introduction

1 The plaintiff is a 38 year-old female suffering from lung cancer. She is suing Changi General Hospital Pte Ltd ("the Hospital") and three doctors for their negligent failure to diagnose and treat a nodule in her right lung during her respective consultations with them in the five years before she was clinically diagnosed with cancer after a biopsy performed in 2012.

2 The first defendant is the Hospital. The second defendant is Dr Imran bin Mohamed Noor ("Dr Imran"), a respiratory specialist, who was an associate consultant in the Hospital's department of respiratory medicine and who saw the plaintiff on 15 November 2007. The third defendant is Dr Yap Hsiang ("Dr Yap"), who attended to the plaintiff at the Hospital's accident and emergency ("A&E") department on 29 April 2010 as a medical officer. The fourth

defendant, Dr Soh Wei Wen Jason ("Dr Soh"), also a medical officer, attended to the plaintiff in the same A&E department over a year later, on 31 July 2011. The second to fourth defendants are collectively referred to as "the defendant-doctors".

3 The plaintiff argues that the presence of the singular pulmonary nodule on her chest x-rays taken at different time points warranted follow-up actions which the defendants failed to carry out. Had the nodule (at the mid-zone of the right lung) been investigated and assessed sooner than 16 February 2012, when a biopsy of the nodule was performed, her cancer would have been treated and her medical outcome would be different today. The plaintiff maintains that the delays in the discovery of the nodule's malignancy caused her injury for which she claims substantial damages in this action. The defendants deny that they are liable to the plaintiff.

4 In this judgment, I will start by discussing the cause and development of the plaintiff's cancer. I will make findings on whether the nodule was malignant since October 2007, as the plaintiff claims, or whether it was benign but turned malignant after 31 July 2011. These findings are relevant to the question of causation and loss. I will comment on the plaintiff's treatment and medical management of the nodule as it featured heavily in the evidence and the plaintiff's case. The plaintiff's assertions essentially require pre-symptomatic detection and treatment of a young person under 35 years of age, with no symptoms of lung cancer, and who had declared herself as a non-smoker. I will examine the defendant-doctors' alleged breaches in relation to their individual consultations with the plaintiff in the light of her assertions on the one hand, and the defendant-doctors' evidence-based assessment and management of the nodule on the other hand. For the defendants, their argument is that there was a

low index of suspicion for malignancy on the occasions each of the defendant-doctors saw the plaintiff. This judgment will also examine the plaintiff's claim that her cancer could have been slow-growing and the validity of the defendants' case that the knowledge that slow-growing lung cancers existed and were more common than previously thought only began to gain traction in the medical community from around 2013. The defendants say they cannot be faulted for not assessing the plaintiff's nodule based on medical knowledge that was not available to them at the material time, *ie*, from 2007 to 2011.

5 The plaintiff is represented by Mr Vijay Kumar Rai ("Mr Rai"). Ms Kuan Boon Theng ("Ms Kuah") acts for the Hospital and Mr Lek Siang Pheng ("Mr Lek") acts for the second to fourth defendants.

The plaintiff's medical condition

6 The plaintiff was diagnosed with non-small cell lung cancer in 2012 by Adjunct Assistant Professor Sridhar Venkateswaran ("A/Prof Sridhar") in the Hospital, following a biopsy of a nodule in her right lung. It was subsequently determined in December 2014 to be an anaplastic lymphoma kiyenase ("ALK")-positive non-small cell lung cancer, meaning that the cancer was caused by an abnormal gene fusion in the plaintiff's body, which was known to be able to transform benign cells to malignant (*ie*, cancerous) cells. Detailed medical evidence was led in relation to the development of the nodule from 2007 to 2012 and the cause and progress of the cancer.

7 The nodule in the plaintiff's lung was first noted by Dr Yeo Cheng Hsun Jonathan ("Dr Yeo") in October 2007. The plaintiff went to the Hospital's A&E department at around 4am complaining of lower chest pain and shortness of breath. Dr Yeo recorded that the plaintiff was a non-smoker and ordered a chest

X-ray for her ("the October 2007 X-ray"). He reviewed it together with Dr Steven Lim Hoon Chin. Both noted that there was an opacity in the right mid-zone of the plaintiff's chest. Dr Yeo diagnosed her presenting complaints on that occasion as a possible case of gastritis and prescribed her medication accordingly. The incidental finding of the opacity was unrelated to the plaintiff's presenting symptoms but Dr Yeo referred her to the Hospital's department of respiratory medicine to review the opacity for good measure.

8 Two weeks later, in November 2007, the plaintiff went to the Hospital's specialist outpatient clinic for respiratory medicine and consulted the second defendant, Dr Imran, a respiratory physician. Dr Imran noted that the plaintiff had already seen A&E for chest pain, had no other respiratory problems, no weight loss, no loss of appetite, no fever or cough, and clear lungs. He reviewed the plaintiff's October 2007 X-ray, noted an opacity on her right lung, and ordered a repeat chest X-ray in an erect view and a right lateral view ("the November 2007 X-ray"). He reviewed the wet films on a light box, concluded that no obvious nodule was noted on the November 2007 X-ray, and gave the plaintiff an open date for follow-up. This meant that the plaintiff could return to him for a follow-up if she felt unwell.

9 The plaintiff made a few other visits to the Hospital's A&E department in the next few years, although she claims only against two doctors who attended to her during her visits in 2010 and 2011. She consulted with Dr Yap, the third defendant, in April 2010, with complaints of right lower chest pain with shortness of breath. Dr Yap ordered a chest X-ray ("April 2010 X-ray") and spotted the nodule in her right lung as an incidental finding. He retrieved the October and November 2007 X-rays and assessed that the nodule was stable with no clinically significant changes and her presenting symptoms were not

related to this incidental finding. After discussing with the senior consultant on duty, Dr Mohan Tiruchittampalam ("Dr Mohan"), he sent the April 2010 X-ray for reporting, discharged the plaintiff and advised her to return if her symptoms persisted or worsened. Around a year later, the plaintiff visited the Hospital's A&E department with complaints of *left* lower ribcage pain. Dr Soh, the fourth defendant, attended to her and ordered another chest X-ray ("July 2011 X-ray") in erect and left oblique views. He missed the nodule in the plaintiff's right lung, diagnosed her pain as musculoskeletal, and after discussing with the senior doctor on duty, Dr Lim Ghee Hian ("Dr Lim"), he discharged the plaintiff with painkillers, advising her to return if her symptoms persisted or worsened.

10 In November 2011, the plaintiff went to a Raffles Medical Clinic complaining of cough, breathlessness and blood in her sputum. Dr Melvyn Wong ("Dr Wong"), who attended to her three times over the next one and a half weeks, initially treated her with cough medication. The plaintiff returned three days later still complaining of cough with blood. Dr Wong then ordered an X-ray ("December 2011 X-ray") and observed an opaque lesion in the X-ray. He gave her a cough suppressant and antibiotics. He received the X-ray report a week later, which confirmed the presence of a round patch and ill-defined shadows at the mid-zone of the right lung and stated that "this is likely to be the result of infection". Dr Wong then referred her to a respiratory physician at the Hospital for further evaluation.

11 A/Prof Sridhar attended to the plaintiff and ordered a number of tests, including a Computed Tomography ("CT") chest scan and another chest X-ray ("second December 2011 X-ray"). The radiologist conducting the CT scan was Dr Elizabeth Chan ("Dr Chan"). The CT scan revealed a lesion that appeared to be a pulmonary hamartoma (*ie*, benign lesion), but Dr Chan recommended a

biopsy for "baseline histological correlation" because of the lesion's interval increase in size, lobulated margins, pleural tagging and the plaintiff's smoking history. As Professor Goh Boon Cher ("Prof Goh"), the defendants' expert, explained, baseline biopsy was recommended by Dr Chan because there had been no previous biopsy. The biopsy was hence intended to establish a baseline, a starting point, for the plaintiff's nodule, so that future comparisons could be made should there be any subsequent changes to the nodule.

12 Dr Andrew Tan ("Dr Tan") carried out the biopsy in February 2012, which revealed that the plaintiff had lung cancer. A/Prof Sridhar broke the news to the plaintiff but assured her that her likelihood of total recovery was high and referred her to consider a lobectomy (removal of a part of the affected lung). Before the lobectomy, she was clinically staged as Stage I, which was early stage cancer. The plaintiff underwent a right lobectomy in March 2012. After the lobectomy, she was diagnosed as Stage IIA non-small cell lung cancer and attended follow-up medical care and treatment by A/Prof Koong Heng Nung ("A/Prof Koong") and Dr Daniel Tan Shao Weng ("Dr Daniel Tan"). She underwent chemotherapy for around four months.

13 Although her tumour was removed in the 2012 lobectomy, the plaintiff suffered a relapse of her cancer two years later in August 2014. She underwent a biopsy, which revealed that she was at Stage IV. In December 2014, under Dr Daniel Tan's care, analysis was carried out on her resected tumour from 2012. It was found to be positive for a rare echinoderm microtubule-associated protein-like 4 ("EML4")-ALK gene rearrangement (explained at [24] below). The same pathological analysis could not be carried out on the plaintiff's 2014 tumour because the size of the tissue sample was too small for the test to be carried out, but Dr David Breen (the plaintiff's expert) ("Dr Breen"), Prof Goh

and Dr Daniel Tan all agree that the plaintiff's cancer in 2014 is likely to be a relapse or recurrence of the ALK-positive cancer she suffered in 2012, and I so find. This is because of the relatively short time between the first and second occurrences (two and a half years) and the plaintiff's good response to ALK-inhibitors in the clinical trials, suggesting that her cancer is still driven by the ALK gene fusion.

14 The plaintiff started on a second-generation ALK-inhibitor, Ceritinib and Nivolumab, in July 2015 as part of a clinical trial. She remained on that treatment for over a year until October 2016, when the cancer started to progress into her brain and mediastinal lymph nodes. She was then taken off the clinical trial and managed with radio surgery to the brain lesions, chemotherapy, and Ceritinib. Since March 2017, the plaintiff has been treated with Lorlatinib, a third-generation ALK-inhibitor, as part of an expanded access program, which is also likely to be sponsored, but this is unclear from the evidence.

Issues before the court

15 The plaintiff essentially alleges that the defendants' negligent delays in detecting her malignancy from 2007 to 2011 caused her to go untreated and allowed the malignancy to grow, undetected and untreated, and for her to progress from Stage 0 or I to Stage IIA lung cancer, aggravating and prolonging her suffering and causing her condition to deteriorate. Although she has pleaded that the defendants also owe her contractual obligations, she has not adduced evidence of the terms of such contracts and how they differ from the defendants' duty to her in the tort of medical negligence. As the plaintiff has failed to present any such evidence and has dropped this claim in her closing submissions, I will not deal with the claim in contract any further.

16 For her claim to be made out, the plaintiff bears the burden of proving her assertion as set out in [15] above, and that the defendants' alleged breaches of duty caused her to suffer loss, in this case the loss of a better medical outcome. I propose to deal with the issue of the nodule's malignancy first. The plaintiff alleges that the nodule was malignant since 2007. If it is established that the plaintiff did not have lung cancer when she consulted with the defendants in 2007, 2010 and 2011 respectively, the defendants could not have delayed the diagnosis of a cancer she did not have at the material time, and have thus not caused her any loss related to and stemming from her cancer. Accordingly, the issue of causation will be resolved with a finding on whether the nodule was malignant at various time points. However, if causative breach is established, the other issue is whether the plaintiff is entitled to recover what she has claimed as damages. In addition, both Ms Kuah and Mr Lek raised contributory negligence on the part of the plaintiff to reduce the percentage of liability and, hence, the quantum of damages recoverable.

Did the plaintiff have cancer at the material time?

General comments

17 Before I go into the evidence, I note that the terms "nodule", "lesion" and "opacity" were used frequently and without much consistency. I accept the witnesses' evidence that the terms are similar and sometimes interchangeable, but that "opacity" and "lesion" are generic terms which would cover anything such as fat, pus, a growth, or a nodule, caused by anything from an infection to a tumour. The term "nodule" is more specific and refers to a three-dimensional lesion or lump, which may be a growth (*ie*, containing cells). In this judgment, I will use the term "nodule" for consistency unless the specific term used is material.

18 Dr Breen used the term "tumour". Mr Lek for the defendant-doctors objected to this terminology because until the abnormality on the right lung was biopsied in February 2012, the abnormality was not a "tumour" in 2007, 2010 or in 2011.

19 Save for the November 2007 X-ray, the other X-rays (namely the October 2007 X-ray, the April 2010 X-ray and the July 2011 X-ray) were taken to diagnose the complaints of the plaintiff on the occasions she attended at the Hospital's A&E department. In this context, the nodule was found by accident. The CT scan of the nodule was in December 2011 and it was biopsied in February 2012. Dr Breen, the plaintiff's expert, a respiratory physician from Ireland, opines that having not seen clinical evidence that the nodule was benign from 2007 to 2011, the defendants are required to manage the plaintiff as if the nodule was malignant. However, the defendants disagree with this thinking. Based on their respective experts' testimonies (radiological and oncological opinions of the nodule), they argue that the plaintiff's nodule was benign from 2007 to 2011, before turning malignant after the plaintiff consulted Dr Soh. This was largely due to the nodule's stability in size and growth from 2007 to 2011, contrasted with its aggressive nature in 2012.

20 More fundamentally, ALK-positive lung cancers (which the plaintiff is suffering from) were only discovered around 2007 and 2009 and the testing for such cancers only became mainstream around 2014 in Singapore. This meant that even when the plaintiff's cancer was diagnosed in 2012, her ALK-positive status of her cancer was still unknown, and was only established in 2014. This is three years *after* her last consultation with Dr Soh in July 2011.

21 It is not disputed that the plaintiff is suffering from ALK-positive non-small cell lung cancer. The plaintiff claims that her nodule was malignant since 2007. As it is the plaintiff's claim in negligence, the legal burden is on her to prove her cause of action. Thus, she bears the burden of proving that she *had* cancer when she consulted with the respective defendant-doctors in 2007, 2010 and 2011. Section 103(1) of the Evidence Act (Cap 97, 1997 Rev Ed) states that whoever desires any court to give judgment as to any legal liability, dependent on the existence of facts which he asserts, must prove that those facts exist. Sections 104 and 105 are also relevant. All said, the plaintiff has to prove her case. In particular, she has to prove that the nodule in her lung was malignant at all of those points in time.

22 As for the defendants, they have not only denied the plaintiff's claim but raised a positive assertion in their defence to defeat the plaintiff's case, namely that the plaintiff's nodule was benign and only turned malignant post July 2011. If they succeed in raising this defence, it would necessarily undermine the plaintiff's assertion that her cancer was malignant, and she would fail to fulfil her burden of proving that she had cancer at all the material times.

The expert evidence

23 Expert evidence was adduced by both parties in relation to the cause and development of the plaintiff's cancer. The plaintiff's expert witness, Dr Breen, is the lead respiratory physician for lung cancer services and a consultant in respiratory medicine in Galway University Hospital in Ireland. His primary specialty is the diagnosis and staging of lung cancer. Patients suspected of having lung cancer are referred to Dr Breen, who then investigates, diagnoses, stages and decides on the management of the particular lung cancer. Prof Goh, the defendants' expert witness, is a senior consultant in medical oncology and

the head of the department of haematology-oncology in the National University Cancer Institute, Singapore and director of the investigational medicine unit in the National University Health System, Singapore. He is a clinician scientist, meaning that beyond patient management, he also researches the biology of malignancy, and has published on the plaintiff's specific cancer, *ie*, non-small cell lung cancer. In relation to the cause and development of the plaintiff's cancer, for the reasons stated in this Judgment, I prefer Prof Goh's evidence, which is rooted in his qualifications and experience. Conversely, Dr Breen admitted that he does not practice oncology. Although he leads a tumour board, which makes collective decisions about the management of a patient's cancer, such boards have multidisciplinary representation precisely because each member lacks intimate knowledge of areas outside his specialty. Dr Breen's experience is therefore of limited utility when considering the cause and prognosis of the plaintiff's cancer.

24 As stated above, the plaintiff was diagnosed with lung cancer in 2012, and the ALK-positive status discovered in 2014. Prof Goh, the Hospital's expert, explained that the plaintiff's ALK-positive non-small cell lung cancer developed from the rare fusion of two genes, namely the ALK gene and the EML4 gene, resulting in the EML4-ALK fusion gene. Medical knowledge of such a gene fusion only began to be acquired around 2007. It is not known what causes this gene fusion to occur. The ALK gene encodes a receptor (able to receive chemical signals from outside a cell) called tyrosine kinase, and upon activation by two of these receptors binding to each other, it can stimulate cell proliferation (*ie*, an increase in the number of cells). The ALK gene is usually not expressed in human tissues but with the abovementioned fusion, the gene is expressed on the cell membrane and is continually activated. This means it can continually send growth signals to the nucleus of the cells, and more

importantly, it is oncogenic (*ie*, having the potential to cause cancer) and can transform what was initially benign cells into malignant (*ie*, cancerous) cells. Dr Daniel Tan agreed with this description. Notably, Prof Goh also stated that EML4-ALK fusion gene cannot exist in benign cells and thus the presence of the fusion gene means that there is cancer.

25 According to Prof Goh, the ALK-positive lung cancer is aggressive in nature. However, the plaintiff's nodule was stable and indolent from 2007 to 2011, which is inconsistent with the behaviour of an ALK-positive cancer. Thus, Prof Goh opined that the plaintiff's nodule was likely to be initially benign scar tissue, but acquired the ALK gene fusion at some point in 2011 to 2012, resulting in a malignancy. Importantly, the juxtaposition of the slow growth of the nodule between 2007 and 2011 against the aggressive spread of the disease in 2012 and 2014 (which was when the plaintiff's cancer recurred after the lobectomy) leads to the conclusion that the nodule was not malignant from 2007 to 2011. If the nodule was malignant in 2007, he would have expected it to grow a lot faster than it did between 2007 and 2011. This means that when the plaintiff consulted the respective defendant-doctors, her nodule was benign.

26 The plaintiff contends that she may already have had a different form of slow-growing lung cancer before the gene fusion occurred. This stemmed from Dr Breen's suggestion that mutations could occur at any stage within a cancer. Alternatively, the plaintiff argues that the gene fusion (and thus her cancer) occurred before July 2011 but was simply slow-growing, thus the indolence of the nodule. Dr Breen stated that some ALK-positive lung cancers were not aggressive in nature, which Prof Goh agreed with. Dr Daniel Tan also testified that he would not conclude that the ALK-positive lung cancers were aggressive

because these cancers were usually diagnosed as ALK-positive only at Stage IV, and knowledge of the history of the ALK-positive disease was limited. In relation to the plaintiff's cancer, Dr Daniel Tan stated that he would not conclude that the relapse of the plaintiff's cancer could be considered aggressive. The plaintiff's chance of relapse was assessed to be 50% within five years, and her relapse after two years four months did not go one way or the other towards assessing her cancer's aggressiveness. Dr Daniel Tan was the plaintiff's treating oncologist called as a witness of fact to testify on her treatment and future medical care. His past experience with ALK-positive lung cancer concerned patients with Stage IV cancer. Hence, he could not comment on the aggressiveness of the cancer based on the timing of plaintiff's relapse.

The court's finding

27 The plaintiff does not have any definitive medical evidence showing that she had cancer from 2007 to 2011. Dr Breen acknowledged as much – when asked whether he had any view regarding when the nodule became cancerous, he stated that "[it] is impossible to state at any stage which of these lesions was a cancerous lesion. All we know is that there was a nodule there". He stated that "[we] cannot state what the pathology was because we didn't have the pathology at the beginning". Thus, the court's finding has to be based on other evidence pointing to the nodule's benignity or malignancy from 2007 to 2011, such as the nodule's growth and its features as reflected in the X-rays. The radiological evidence does not show whether the nodule is malignant or benign; what it shows is the size, shape and growth of the nodule, and the expert evidence was adduced towards interpreting the significance of these features.

28 I have considered that the case is slightly more difficult in relation to Dr Soh's consultation in July 2011. By November 2011 the plaintiff already had

blood in her sputum and was referred to A/Prof Sridhar. The short timeframe of months between Dr Soh's consultation and the plaintiff's visit to Dr Wong and A/Prof Sridhar makes it possible to argue that malignancy had already occurred by July 2011. Plainly, the plaintiff bears the burden of proving that she had cancer at all the material times. In my view, the plaintiff has not established on a balance of probabilities that she already had cancer in July 2011. With Prof Goh's opinion on the cause of her cancer in mind, which I will come to, there was little evidence to indicate in July 2011 that the gene fusion had occurred and the nodule in her right lung had turned malignant. Even when the plaintiff saw A/Prof Sridhar, he still treated her conservatively initially and the CT scan performed in December 2011 showed features that were reported by the radiologist to be benign. I thus find that she cannot prove on the balance of probabilities that she already had cancer in July 2011 when she consulted with Dr Soh.

29 In my view, the defendants are able to show on a balance of probabilities based on Prof Goh's opinion that the plaintiff's nodule was initially benign. This opinion is further supported by the other medical evidence on the nodule's stability and the lack of features indicating malignancy. I will go through the radiological evidence in some detail. The Hospital called Dr Lynette Teo ("Dr Teo") as an expert witness. Dr Teo is a senior consultant in the National University Cancer Institute, Singapore, and Department of Diagnostic Imaging, National University of Singapore. She has about 11 years of experience as a specialist in radiology.

30 Four X-rays were taken of the plaintiff from 2007 to 2011. The first is the October 2007 X-ray, which was ordered by Dr Yeo in the A&E Department, and was the first time the plaintiff's nodule was noticed as an incidental finding.

All four X-rays were eventually reported, and the nodule measured, by the Hospital's radiologists, but the October and November 2007 X-rays were retrospectively reported in 2012. This means that in 2007, radiological reports of the X-ray were not prepared and thus unavailable. The plaintiff's witness, Dr Tan, and the defendants' expert, Dr Teo, also measured the nodule in these X-rays. Their measurements were:

	October 2007 X-ray	November 2007 X-ray	April 2010 X-ray	July 2011 X-ray
Radiological reports	1.537 cm x 1.44 cm	No measurement	1.9 cm	2.6 x 2.2 cm
Dr Tan	1.5 cm	1.5 cm	1.9 cm	2.3 cm
Dr Teo	1.72 x 1.88 cm	1.77 x 1.77 cm	1.73 x 2.38 cm	2.13 x 2.47 cm

31 In relation to the method and accuracy of measurements, Dr Teo explained (and this was not disputed by Dr Breen) that there is inter- and intra-observer variability in a nodule's measurement. This means that two radiologists may reasonably take different measurements of the same nodule, and one radiologist may take different measurements of the same nodule at different times. Hence, to determine a nodule's development in size, the measurements taken by one person in one sitting are most accurate. Measurements taken of nodules could vary up to 10-20%. Smaller nodules have a higher margin of tolerance. As a result, the measurements of the nodule by the radiologists who reported the X-rays, Dr Tan, and Dr Teo differed as between each other by around 2-3mm. Dr Tan and Dr Teo's set of measurements for the

four X-rays showed slight increases in the size of the nodule from October 2007 to July 2011.

32 This is an appropriate juncture to consider the plaintiff's case that the nodule measured 2.2cm as early as 15 November 2007. Compared with the measurements on 31 October 2007, this would have meant a doubling time of merely nine days. Mr Rai, the plaintiff's counsel, bases this on Dr Rameysh Danovani bin Mahmood ("Dr Rameysh")'s April 2010 X-ray report, wherein Dr Rameysh noted "[a] rounded opacity measuring approximately 2.2cm is seen in the (R) mid zone, which appears stable since the previous chest radiograph dated 15/11/2007". The issue to be determined is not what Dr Rameysh perceived the nodule size to be on 29 April 2010, but its actual size as recorded on the reports. In this regard, several witnesses have come forth to give evidence that the nodule grew in an indolent way. More importantly, Dr Rameysh has since relooked at the Dicom images of the X-rays in the course of preparing his Affidavit of Evidence-in-Chief and concluded that the nodule measured approximately 1.5cm on 15 November 2007 and approximately 1.9cm on 29 April 2010. The inference that the plaintiff drew from Dr Rameysh's radiology report was therefore untenable.

33 The radiological evidence shows that the nodule was stable, indicating its benignity, from the period of 2007 to 2011. First, the slow rate of growth of the nodule was consistent with its benignity. I accept Dr Rameysh, Dr Teo, Associate Professor Malcolm Mahadevan ("A/Prof Mahadevan"), the defendant-doctors' emergency medicine expert, and Prof Goh's evidence that a nodule which has slightly or marginally increased in size and/or did not display any clinically significant growth would be regarded as stable, in contrast to Dr Breen, the only witness who implied that a nodule could only be stable if it did

not change at all or if there is calcification in the nodule. Although the witnesses provided slightly different opinions on what substantial or otherwise clinically significant growth would entail, this is largely a professional judgment to be made by the radiologist or doctor when considering the nodule. Further, Prof Goh explained that it was not just the growth of the nodule that was significant, but its *rate* of growth, as benign lesions could grow as well. Thus, even on Dr Tan's measurements (1.5cm in 2007 to 1.9cm in 2010), the increase in size over this period would not be considered significant. Based on her measurements, Dr Teo opined that the rate of growth of the nodule was consistent with the nodule being stable. The April 2010 X-ray report by Dr Rameysh and the July 2011 X-ray report by Dr Khoo Teng Kew and Dr Mohammad Taufik also stated that the nodule "[appeared] stable" and was "largely stable" respectively. A/Prof Mahadevan also opined that the nodule's rate of growth was not clinically significant. Given the consistent evidence, I accept that the nodule would have been considered stable, and I so find.

34 The plaintiff, through Dr Breen, argues that there are slow-growing lung cancers and the nodule's slow growth does not lead to a conclusion that the nodule was benign or malignant. However, all parties now know that the plaintiff has ALK-positive lung cancer. Prof Goh explained that this cancer is generally aggressive, and the behaviour of the plaintiff's cancer in 2012 and 2014 in fact reflected this aggressiveness. Thus it is unlikely that the nodule's indolence was a result of slow-growing cancer.

35 Second, the long doubling time of the nodule (*ie*, the time taken to double in size) was also another indicator of its stability and benignity. Dr Teo gave evidence that the doubling time, by her calculations, was 1290 days, in contrast to the usual doubling time of a malignant nodule, which was around 30

to 500 days. The parties also relied on other medical literature that placed the median volume doubling time of a malignant nodule at 98 (the Henscheke paper) and 149 (the Hasegawa paper). Regardless, by any measure, according to Dr Teo, the nodule would still be considered "extremely slow growing" and thus unlikely to be malignant. The plaintiff relies on Prof Goh's testimony that a doubling in size of the nodule in three years would be considered substantial growth. She argues that the nodule had grown by 26% in diameter between October 2007 and April 2011 (based on Dr Tan's measurements, *ie*, from 1.5 cm to 1.9 cm), translating to a doubling in volume of the nodule, which was substantial. However, this assumes that the nodule was spherical in shape, and there was no evidence to suggest so. Dr Teo had in fact stated that the nodule was ovoid. Prof Goh also clarified he meant "doubling" of the diameter rather than the volume, although he later acknowledged that Dr Teo was referring to the volume doubling time of a nodule, determined by keying in an average of the length and width of the nodule measured into an online calculator, and agreed with her opinion on that basis, *ie*, that the volume doubling time of the nodule was far longer than what would be expected from a malignant nodule.

36 Third, between 2007 and 2011, there were no noted features of the nodule indicating malignancy. The nodule was described as "non-specific and… indeterminate in nature" in the April 2010 X-ray report, "non-specific in nature" in the July 2011 X-ray report, and "round"/"rounded" in the November 2007, April 2010 and December 2011 X-ray reports. No abnormalities indicating malignancy, such as spiculation (stranding at the edges), cavitation (with a cavity, perhaps indicating tuberculosis) or lobulation (looking like lobes, signalling uneven growth) were noted.

37 Fourth, even when the plaintiff was diagnosed with lung cancer following the biopsy in February 2012, she was clinically staged at Stage I, a very early stage of her cancer. A few months before that in December 2011, when she underwent a CT scan, the radiologist Dr Chan still diagnosed it as a benign pulmonary hamartoma and A/Prof Sridhar similarly thought that the plaintiff's nodule was benign. Although Dr Chan recommended a biopsy (which was eventually carried out in February 2012), she recommended it for baseline histological correlation in view of the plaintiff's symptoms (*eg*, blood in her cough) and known history of smoking, such that there could be a comparison with the results of later scans and investigations (see [11] above) should subsequent changes to the nodule occur. Dr Chan had already opined on the results of the CT scan. The point is that even in late 2011 and early 2012, both A/Prof Sridhar and Dr Chan were inclined towards the view that her nodule was benign.

38 Further, even though Dr Breen repeatedly testified that a CT scan should have been carried out during all the defendants' consultations from 2007 to 2011, he was unable to testify as to what such a CT scan would have possibly shown. This is surprising seeing his insistence on a CT scan and given his experience in staging and diagnosing lung cancers through these exact diagnostic tests. As was evident from the CT scan carried out in December 2011, even at this late stage, the plaintiff's nodule was still reported as benign and inferentially it is unlikely that any previous CT scans carried out would have been any different. Finally, even though the plaintiff claims that her nodule was malignant since 2007, when she was diagnosed four years later, she was only at Stage I. If she had been suffering from cancer since 2007, one would not expect her to still be at such an early stage of the cancer. The evidence from the CT

scan and biopsy thus shows that it was unlikely that her nodule turned malignant until 2012.

39 Although Prof Goh could not say for certain when the gene fusion actually occurred, he was able to opine that there was no obvious change in the nodule between 2007 and July 2011. Furthermore, with Prof Goh's opinion on the cause of her cancer in mind, there was little evidence to indicate that in July 2011 the gene fusion had occurred and the nodule in her right lung had already turned malignant. I accept Dr Breen's evidence (which Prof Goh agreed with) that there are some ALK-positive lung cancers that do not behave aggressively, but this misses the point. Other than the fact that Dr Breen also agreed that ALK-positive lung cancers are generally aggressive, on the evidence, the plaintiff's ALK tumour *was* aggressive in nature, as shown by the microscopic metastasis in the plaintiff's lymph nodes in 2012 and its extensive spread during the 2014 relapse. The plaintiff's response to the ALK inhibitor during the clinical trial was also shorter than the average patient. The nub of Prof Goh's evidence was not simply that the plaintiff's tumour was aggressive but that there was a marked *change* in the behaviour of the nodule and the development of the plaintiff's condition over the various time points. The nodule's growth (in millimetres) was indolent and stable between 2007 and July 2011 (see [33] above), but was aggressive in and after 2012. This thus indicates "an obvious change in the character of this lesion". The discordance between the nodule's growth in the two periods lends credence to Prof Goh's opinion, which I accept. I also note that the plaintiff did not dispute Dr Chan's diagnosis of the plaintiff's nodule as benign, a pulmonary harmatoma, during the CT scan in December 2011, and no expert had offered a different diagnosis of the CT scan. In view of this, and for all the reasons above, I find that the nodule was initially benign in nature but later became malignant in the period after July 2011 to early February 2012.

40 For completeness, Dr Breen also stated that certain lung cancers can be slow growing, as "adenocarcinoma in situ/minimally invasive adenocarcinoma can be a very prolonged period or stability", and thus he "[did] not believe that the original apparent nodule was not an early stage cancer which subsequently changed in growth pattern in subsequent years". However, this clearly did not apply in the plaintiff's case. An adenocarcinoma *in situ* is also known as Stage 0 of a cancer, and is reflected in a nodule with ground glass appearance. Prof Goh and Dr Teo's evidence is that a cancer at Stage 0 (or an adenocarcinoma in situ) could not have been detected on an X-ray. This was because such Stage 0 nodules would be ground glass opacities which were not dense enough to be seen on an X-ray. It was not disputed that the plaintiff's nodule was visible on her first X-ray taken in October 2007. Thus, the plaintiff could not have had an adenocarcinoma *in situ* from 2007 to 2011. When cross-examined by Ms Kuah, Dr Breen also agreed that he was not suggesting that the plaintiff's nodule was an adenocarcinoma *in situ* or a minimally invasive adenocarcinoma.

41 In relation to the plaintiff's contention that she had a different form of lung cancer before the gene fusion occurred, this was not supported by the evidence. Dr Breen had only offered it as a postulation and when asked whether he was putting forth the evidence that the plaintiff's cancer was plain adenocarcinoma before transforming into ALK-positive cancer, he simply replied that he "[could not] state what it was at the outset". Without any other medical evidence, the plaintiff cannot prove that this was what had happened. Conversely, Prof Goh testified that it was unlikely that the plaintiff's nodule commenced as a non-ALK-positive lung cancer before developing into an ALK-positive lung cancer. He referred to the plaintiff's good response to ALK-inhibitors as evidence that her malignancy was driven by a single gene fusion instead of some other molecular driver.

42 For the reasons stated, the plaintiff cannot prove that she already had cancer in July 2011 during her consultation with Dr Soh. I accept and find that the defendants have, on a balance of probabilities, established that the plaintiff did not have cancer during the individual consultations with the defendant-doctors. This conclusion means that causation and loss cannot be established and the plaintiff's case in negligence against the defendants cannot succeed. As a large part of the complaints against the defendants is in relation to the management of the plaintiff in not investigating the nodule or referring her to a specialist, I will now turn to comment on the evidence led as to the staging of the plaintiff's cancer and her eventual management. This goes back to the plaintiff's assertion that early detection would have meant less severe treatment.

Treatment of lung cancer from 2012

43 The medical evidence shows that the plaintiff was diagnosed at the earliest possible stage of her cancer and received the full treatment available to her. She did not lose out on any opportunity to take advantage of any available treatments and did not undergo any treatment that could have been avoided. The plaintiff was clinically staged as Stage I by A/Prof Sridhar in March 2012 (see [11] above), which was the earliest possible clinical staging. As stated above at [40], a Stage 0 cancer would not have been detected on an X-ray as the nodule would have a ground glass appearance and would not be visible on an X-ray. The most appropriate treatment for early stage cancers (it was in fact only available for early stage cancers) was a lobectomy and adjuvant chemotherapy, which the plaintiff underwent. The plaintiff herself accepted that her lobectomy would have been unavoidable. The adjuvant chemotherapy was also an unavoidable treatment, as it is usually administered after surgery to eradicate

any microscopic traces of cancer which cannot be spotted and reduce the risk of relapse. Dr Daniel Tan testified that the plaintiff's chemotherapy (including its extent, *ie*, four cycles of vinorelbine-cisplatin) was the standard treatment for early stage cancers.

44 Although the plaintiff was later pathologically staged as Stage IIA, such staging, even though more accurate, was only possible *after* the tumour had been surgically resected. This means that any clinical decision made on her course of treatment would have always been based on her clinical staging of Stage I. Regardless, Dr Breen, A/Prof Koong (who advised the plaintiff to undergo surgery) and Prof Goh all agreed that even assuming that it was known before surgery that the plaintiff would have been pathologically staged at Stage I, the appropriate course of treatment for her of a lobectomy and adjuvant chemotherapy, being the most appropriate for early stage cancers, would not have been any different. Dr Daniel Tan also explained that the plaintiff's staging was at the borderline of Stage I and Stage IIA as far as the size of the tumour was concerned.

45 The genetic make-up of the plaintiff's cancer also had certain implications in terms of its diagnosis and treatability. The ALK fusion gene was discovered in 2007, and even in 2009, the medical community was still beginning to understand whether this gene fusion had any therapeutic and oncogenic implications. It was also only in 2009 that proof of concept completely established that an ALK inhibitor was the appropriate response. Dr Daniel Tan testified that it was only in 2014 that testing for the gene became more established and more commonly performed for newly diagnosed Stage IV lung cancer. In 2012, although a test was carried out for an EGFR mutation (which was more commonly known) for the plaintiff, the testing for the ALK

fusion gene, being a relatively new molecular entity, was not initiated then. It was only in 2014, when the plaintiff's cancer relapsed, that he tested for ALK.

46 Crucially, ALK inhibitors were only shown to have utility in or around 2011, and the first drugs approved for the treatment of ALK-positive cancer were only available for Singapore clinical trials in 2013 or 2014. Even then, this was only for patients suffering late stage (Stage IV) cancer. This was why Dr Daniel Tan only initiated ALK testing after the plaintiff's relapse, as ALK inhibitors were unavailable in 2012 and thus the finding would have made no difference to the management of the plaintiff's cancer. Prof Goh agreed with Dr Daniel Tan's assessment. This meant that the plaintiff had also received the treatment of ALK inhibitors for her cancer at the earliest available time.

47 In terms of her chances of survival, as the plaintiff was diagnosed at an early stage of her cancer (Stage IIA), she had, at the time of her diagnosis in 2012, a more than even chance of five-year survival. Prof Goh produced statistics from a study of non-small cell lung cancer patients who had undergone adjuvant chemotherapy after full resection of their tumour. This study found that there was a 61-62% five-year survival rate for Stage IIA patients. Dr Daniel Tan, who was a factual witness, produced statistics from the International Association for the Study of Lung Cancer that the five-year survival rate for Stage IIA lung cancer was 52%, although these statistics were far more general. Although she may have had a slightly higher statistical possibility of survival if she were treated at Stage I (around 72-73%), it is difficult to know, certainly not on the balance of probabilities, whether this would have made a difference to the progression of her cancer, which Prof Goh consistently testified was aggressive in nature. I also note that the plaintiff's claim for damages is not for her shortened life expectancy, but for the cost of her drugs for the next ten years.

Her claim is thus framed in the expectation that she will survive for the next ten years, as opposed to a shortened life expectancy.

48 The foregoing shows that the plaintiff was able to and did receive the full treatment possible for her lung cancer since her diagnosis in 2012. The type and extent of her treatment was unfortunately unavoidable in any circumstance, and was in fact the best and most appropriate treatment she could have received.

Duty and Breach

49 Having found that the plaintiff did not have cancer at the material times, and that her treatment would have remained the same, the plaintiff's claim in negligence cannot succeed without proving causation. However, I will nevertheless evaluate the defendants' management of the plaintiff and comment on whether it met the applicable standard of care. Regardless of whether the nodule was ultimately malignant or not, the presence of the nodule in the plaintiff's lung was an abnormality. A doctor exercising reasonable care and skill would have still needed to make a clinical decision as to how to manage the plaintiff's nodule. In this case, the plaintiff had no symptoms that were related to the nodule to place her at risk of cancer. Yet her assertions require pre-symptomatic detection and treatment of a young person under 35 years of age, with no symptoms of lung cancer, and had declared herself as a non-smoker. I will examine the defendant-doctors' alleged breaches in relation to their individual consultations with the plaintiff in light of her assertions. In contrast, her presenting symptoms were of a different origin and the defendant-doctors evidence-based assessment and management of the nodule was from the view point of a low index of suspicion for malignancy on the occasions each of the defendant-doctors saw the plaintiff.

A doctor's duty and standard of care

50 It is well-established that doctors owe duties to their patients to take reasonable care in the diagnosis, treatment and advice rendered to patients. Hospitals similarly owe duties of care to their patients. The defendants do not dispute that they owed a duty of care towards the plaintiff. I thus move on to determine if the defendants' duties to the plaintiffs were breached. The standard of care applicable to doctors was recently canvassed in *Hii Chii Kok v Ooi Peng Jin London Lucien* [2017] SGCA 38 ("*Hii Chii Kok*").

51 In relation to diagnosis and treatment, the test in *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582 ("*Bolam* test") applies together with the addendum in *Bolitho v City and Hackney Health Authority* [1998] AC 232 ("*Bolitho* addendum"). In determining whether the professional standard has been met, the court has to consider (*Hii Chii Kok* at [76]):

(a) Whether the defendant's practice is supported by a responsible body of medical opinion within the profession, even if there is another body of opinion which disagrees;

(b) Whether the expert(s) holding the opinion had directed their minds to the comparative risks and benefits relating to the matter;

(c) Whether the opinion was defensible, *ie*, it was internally consistent and did not contradict relevant extrinsic facts.

52 It is not disputed by the parties that the applicable standard of care for the plaintiff's allegations for diagnosis and treatment is the *Bolam* test with the *Bolitho* addendum, although the plaintiff's claim is largely one of missed diagnosis as opposed to negligent treatment. Her claim is not quite that the

defendants were negligent when providing her with treatment (here, either no treatment or painkillers for her presenting complaints) but that they did not treat her for cancer. Such an approach to treatment stems from the defendants' *diagnosis* that she had no cancer and that her pain was of a different origin.

53 In relation to advice, the Court of Appeal in *Hii Chii Kok* acknowledged that a doctor's duty in relation to patient advice was different from his duty in diagnosis and treatment. A three-stage test was to be applied, evaluating (a) whether the information withheld was relevant or material; (b) whether the doctors possessed such information at the relevant time; and (c) whether the doctors were reasonably justified in withholding such information (at [184]).

54 The next question is whether the advice aspect, and thus the three-stage test in the preceding paragraph, is applicable here. In *Hii Chii Kok*, the Court of Appeal acknowledged that the aspects of diagnosis, treatment, and advice often emerge and submerge at various points in a doctor-patient relationship, but that the essential feature of the aspect of advice is the active role played by the patient in the decision-making process (at [93]). The patient needs to have all the relevant and material information to make the most appropriate decision for herself in relation to her treatment or risky and/or invasive diagnostic processes (at [96]-[98]). Conversely, when a patient is being diagnosed and treated, her role is largely passive. The defendants argue that the only applicable standard of care here is the *Bolam* test with the *Bolitho* addendum (as specified in [51] above), as the true nature of the plaintiff's claims against the defendants is in relation to diagnosis and treatment and not advice. The plaintiff argues that the advice aspect is engaged in the sense that the defendants failed to advise her of her "not insignificant" risk of cancer (although I note that her pleaded case does

not contain an express reference to this), the results of any X-rays, or to go for further investigations or at least that other diagnostic options existed.

55 In my view, the plaintiff's claims fall squarely within the realm of diagnosis and treatment. She was in a position of passivity from the time she started consulting the defendants to when she was not given a specific treatment or treated with painkillers. The defendants did not advise the plaintiff of the risk of cancer because they, based on their diagnosis, did not consider that cancer was the likely cause of the plaintiff's presenting complaints, and therefore did not think that the nodule presented a risk of cancer. Their interpretations of the X-rays and the corresponding decision not to undertake more diagnostic tests was a result of their diagnosis that the plaintiff's nodule was benign or that her pain was simply musculoskeletal in nature, and that the nodule was an incidental finding unrelated to her presenting complaints. If they considered that the plaintiff's condition, *based on their diagnosis*, did not warrant taking more tests or referral to other doctors, and if they were wrong in considering that it was not warranted, this was a problem in their diagnosis and should be evaluated based on the *Bolam* test. To the extent that they should minimally have told the plaintiff that she had a nodule or opacity in her right lung, my view is that this should still be considered part of diagnosis, as this is part of their communication of their diagnosis to the patient, rather than advising her on different treatments or diagnostic procedures. However, as will be evident, I find that the doctors who had noticed the nodule (Dr Imran and Dr Yap) had communicated this to the plaintiff, and for the doctor who had not (Dr Soh), he simply did not have such information, and the correct approach would be to analyse if he was negligent in not having such information (*ie*, in not noticing the nodule). One cannot give what he does not have (*Hii Chii Kok* at [133]).

56 Finally, in determining the question of breach, I also highlight the Court of Appeal's observation that there is a danger of hindsight bias in medical negligence cases, on the part of medical experts, lawyers, and judges (*Hii Chii Kok* at [157]-[159]). Thus, when evaluating whether the doctor has met the requisite standard of care in any aspect of his interaction with his patient, the court should apply the tests with reference only to the facts known at the time that the material event occurred.

Breach of duty

57 I now examine the defendants' alleged breaches in relation to the plaintiff's diagnosis and treatment. As stated above (at [55]), the aspect of advice does not come into play. As the plaintiff's claims against the first defendant, the Hospital, are mainly based on the breaches by its individual doctors, *ie*, the second to fourth defendants, I will deal with the second to fourth defendants before evaluating the plaintiff's case against the Hospital.

Dr Imran

58 Dr Imran, the second defendant, was the respiratory specialist working in the Hospital. He saw patients in the Hospital's specialist outpatient clinic. The plaintiff saw Dr Imran in November 2007 following a referral from the Hospital's A&E department (see [7]-[8] above). Dr Imran consulted the A&E records and noted that the plaintiff had complained of centralised chest discomfort, nausea and mild breathlessness. She was diagnosed by Dr Yeo in the A&E department as having "possible gastritis / [Gastroesophageal Reflux Disease]". The A&E record also noted that she was a non-smoker. Dr Yeo ordered the October 2007 X-ray and noted that there was an incidental finding of opacity in the mid-zone of the plaintiff's right lung, thus referring her to Dr

Imran. During the consultation, Dr Imran went through the A&E records with the plaintiff and conducted a physical examination. This is corroborated by Dr Imran's medical notes, where he recorded that the plaintiff saw A&E for chest pain, had no respiratory symptoms otherwise (no cough, no blood, no sputum), no weight loss, no loss of appetite, and that her lung was clear.

59 Dr Imran reviewed the October 2007 X-ray, noted a rounded opacity in the right mid zone, and ordered the repeat November 2007 X-ray in two views, an erect view and lateral view. He then studied the November 2007 X-ray on wet film on a light box. In the erect view he did not spot the opacity. On hindsight he testified that the opacity was "completely hidden by the rib". In the right lateral view he also testified that he could not see any "corresponding opacity". The plaintiff claims that Dr Imran had seen the obvious opacity in the erect view of the November 2007 X-ray when consulting with the plaintiff. The fact that Dr Imran was, during the trial and with the benefit of hindsight, able to point out the opacity in the erect view cannot be taken to mean that he had seen it in November 2007. I accept Dr Imran's evidence that he looked at both views of the November 2007 X-ray together and, on the basis of both, either did not see the opacity or saw a very faint version of it as compared to the October 2007 X-ray. This was consistent with his contemporaneous notes and treatment plan for the plaintiff. He recorded in his handwritten notes that the "opacity [seemed] clear". The plaintiff contended that the phrase instead read "opacity for investigation", but I accept Dr Imran's evidence since (a) this was Dr Imran's handwriting and there was no reason to prefer the plaintiff's personal interpretation; (b) it was consistent with the line above it, which read "[Chest X-ray] → No lung lesion", which the plaintiff did not challenge; and (c) it was consonant with Dr Imran's eventual conclusion to give the plaintiff an open date. The plaintiff has not pursued this argument in closing submissions.

60 On that basis, Dr Imran concluded that there was no obvious nodule, that the opacity appeared to be resolving or resolved, and was likely to be infective or inflammatory in nature. Given that the plaintiff was asymptomatic in November 2007, Dr Imran gave her an open date for follow up and advised her to return for a review if she felt unwell or had any new symptoms. The plaintiff agreed that she understood this to mean that she could call the outpatient clinic if she were unwell or in pain. He did not request that the X-rays be reported (there was no routine reporting at the Hospital then).

61 In summary, during Dr Imran's consultation with the plaintiff:

(a) Dr Imran diagnosed the plaintiff by going through her medical records with the plaintiff, physically examining her, and ordering and reviewing the November 2007 X-ray in two views together with the October 2007 X-ray. He concluded that there was no obvious nodule in the plaintiff's right lung, that the plaintiff's opacity appeared to be resolving or resolved on its own, and that it was likely to be infective or inflammatory in nature.

(b) Dr Imran did not administer any treatment to the plaintiff. He only gave her an open date for follow-up and advised her to return for a review if she felt unwell or any pain.

62 I now come to whether Dr Imran had met the applicable standard of care. Although I have mentioned that the applicable test is the *Bolam* test with the *Bolitho* addendum (see [51] above), the Hospital and Dr Imran did not call any expert in respiratory medicine to support Dr Imran's management of the plaintiff. Hence, Dr Imran cannot simply claim that he acted in accordance with a practice accepted as proper by a responsible body of medical men skilled in

that particular art: see *Bolam* at 587. He thus has to prove, on the usual negligence principles, that he has met the general professional standard of care, *ie*, he has done what an ordinary skilled member of his speciality, respiratory medicine, would reasonably have done in his shoes: *Hii Chii Kok* at [57].

63 Dr Breen's position essentially was that there was an opacity in the plaintiff's lung and should have been followed up with a CT scan or further investigations, and even if it had been assessed to be resolving, Dr Imran should have called the plaintiff back for a follow-up to ensure that the opacity had completely resolved. I will evaluate this later, but note that there are three limitations to Dr Breen's expert opinion. First, as mentioned above (at [23]), the patients that Dr Breen sees are all already suspected of having lung cancer with obvious symptoms. This means that he has greater reason to carry out more thorough investigations, as opposed to a respiratory physician simply seeing a patient from a referral from A&E without any notable suspicion of lung cancer. Second, Dr Breen has little knowledge of the common causes of lung opacities or symptoms mimicking lung cancer in Singapore, such as tuberculosis. When asked, he simply stated that "anything can mimic the features of lung cancer including tuberculosis". Third, he was generally unaware of the healthcare practice in Singapore. He admitted to never training or visiting professionally in Singapore, having no degree of familiarity with the Singapore healthcare system, and being unaware of the clinical pathway here. His evidence in the context of a lung specialist screening for malignancy at a specialised tertiary centre as to what Dr Imran should or should not have done in the significantly different position of a Singapore respiratory physician working in a general hospital was therefore of limited utility.

64 I start with Dr Imran's diagnosis. To determine whether a diagnosis was reasonable, both the approach to diagnosis (*ie*, the diagnostic tests ordered to determine the patient's medical condition) and the doctor's eventual diagnosis (*ie*, the medical condition the patient is suffering from) should be considered: see *Clerk & Lindsell on Torts* (Michael A Jones gen ed) (Sweet & Maxwell, 21st Ed, 2014) ("*Clerk & Lindsell*") at [10-69]. A doctor should not only decide what diagnostic tests should be carried out but also reach a reasonable conclusion from the results. If he chooses and carries out the appropriate diagnostic tests and comes to a reasonable conclusion on the results, it does not matter that the diagnosis eventually turns out to be wrong: *Hii Chii Kok* at [160].

65 The plaintiff argues that Dr Imran was negligent in (a) his diagnosis in failing to notice the nodule in the November 2007 X-ray, thus concluding that the opacity was infective in nature and was resolving or had already resolved, and (b) his approach to diagnosis, in failing to send the November 2007 X-ray for reporting and/or ordering a second X-ray. In particular, the plaintiff argues that having made such a big deal about the fact that wet films were difficult to read on a light box, Dr Imran should have sent the X-rays for reporting. The plaintiff also claims that Dr Imran breached his duty by not asking the plaintiff to return for a follow-up check to confirm his diagnosis and ensure that her opacity had completely resolved on its own.

66 The first question is whether it was reasonable for Dr Imran, exercising the ordinary care and skill of a respiratory specialist, to have missed the opacity or seen so little of it, such as to conclude that the opacity was resolving or resolved. I find that it was reasonable for him to have reached the conclusion that the opacity was resolving based on his interpretation of the X-rays and the facilities available to him. This is a classic case where the court has to guard

against hindsight bias (see [56] above). An opacity that is now known to have developed into lung cancer may still have been quite reasonably failed to be observed by a medical practitioner almost a decade ago. Two radiologists, Dr Teo and Dr Tan, agreed that it was difficult to see the opacity. Dr Tan testified that with a single X-ray, the nodule may not have been seen, but because he had a "sequence of events", and made an inference that the opacity behind the rib was the same nodule, he was able to measure the nodule. Dr Teo also expressly cautioned that she had evaluated all the other X-rays from 2007 to 2011 showing the nodule and hence may have hindsight bias. Dr Teo also supported Dr Imran's observation and testified that she would also have concluded that the opacity was resolving based on the comparison between the October 2007 and November 2007 X-rays. Less of the opacity was showing out from below the rib in the November 2007 X-ray (*ie*, it became smaller).

67 I note that Dr Michael BKK Toh ("Dr Toh"), who retrospectively reported the November 2007 X-ray in 2012, noted in his report a "rounded homogenous density" which was "not definitely correlated in the lateral view" and that "further action or early intervention [was] required". Thus, unlike Dr Imran, Dr Toh had noted the opacity in the November 2007 X-ray. Mr Lek argues that Dr Toh may well have been susceptible to hindsight bias, had the benefit of electronic manipulation of the X-rays, or checked all of the plaintiff's other X-rays before making his report. Without evidence from Dr Toh personally (he passed away before trial), the plaintiff correctly argues that these are assertions. Nevertheless, Dr Toh's report is of limited utility because the court lacks knowledge of his instructions and available material. Further, given that Dr Toh's report was prepared after the plaintiff's cancer was discovered, I accept the possibility that his call for early intervention could have been influenced by the diagnosis. Even in the report, it was stated that the clinical

diagnosis given to him was "pneumonia follow up film". This may have impacted his finding that there was "air space opacity" and that it was likely to be infective in nature. Thus, on balance, I prefer Dr Teo and Dr Tan's evidence that the opacity would be challenging to spot without the benefit of hindsight.

68 Further, I accept as plausible Dr Imran's evidence that it was more challenging to see the opacity when evaluating wet film of the November 2007 X-rays as Dr Imran did in 2007 (*ie*, after the processing of the film on a light box, without electronic aid), as opposed to a digital system, and without the benefit of a radiological report (there was no routine reporting in the Hospital then). Electronic manipulation of the X-ray images were not available in 2007, and Dr Imran was unable to magnify areas of interest, use digital aids in measuring the opacity, and adjust the brightness and contrast of the images. The interpretation of the X-ray could hence be affected by film quality and also the brightness of the light box that the film is placed on.

69 Finally it is appropriate here to consider a case the plaintiff relies on, *Jacqueline Lee Freestone v Murrumbidgee Local Health District* [2016] NSWDC 53 ("*Jacqueline Lee*"), where a diagnostic radiologist was held negligent in failing to spot and report an incidental finding of a lesion in a CT scan. *Jacqueline Lee* is clearly distinguishable in that it involved a diagnostic radiologist who had not reported a finding that would readily have been spotted by someone in her position exercising reasonable care and skill. In this case, Dr Imran was a respiratory physician and two radiologists have stated that the plaintiff's nodule was challenging to spot without the benefit of hindsight.

70 The second question is whether Dr Imran's diagnosis based on his assessment of the plaintiff's nodule was reasonable. I find that it was. Dr

Imran's diagnosis that the plaintiff's opacity was likely to be infective or inflammatory in nature and was resolving and would resolve on its own was supported not only by the radiological evidence but also the plaintiff's symptoms and profile. As explained by Dr Teo, a doctor's clinical assessment of a patient is based on not only the radiological data available, but the patient's age, sex, family history, risk factors, clinical symptoms and the results of other investigations. Further, although a doctor is responsible for eliciting a medical history from the patient and coming to a diagnosis on his assessment of the patient's risk factors or clinical symptoms, a patient also bears responsibility for giving a complete and truthful account of her lifestyle and condition, such that a doctor would be able to come to an accurate conclusion.

71 The plaintiff was young (*ie*, aged 28 in 2007), lacked any other respiratory symptoms, and had conveyed that she was a non-smoker to Dr Imran. She claims that Dr Imran did not ask whether she was a non-smoker, but I prefer Dr Imran's evidence that he would have confirmed her non-smoking status during the consultation, particularly because the A&E medical records expressly stated that she was a non-smoker. Further, the plaintiff's evidence as to her own smoking history has been inconsistent across the doctors she visited, lending little credence to her claims that she had not been asked for her smoking history and even if she been asked for her smoking history, she would have been truthful and accurate. Even in relation to the consultations beyond those with the defendants, (a) the A&E medical records in 2007 stated that she was a non-smoker; (b) Dr Wong's notes in 2011 stated that she had been a smoker from age 14 to 30, and had given up two years earlier (*ie*, in 2009, after 2007); (c) the National Cancer Centre's notes (where she was under the care of Dr Daniel Tan) stated that she was a "never-smoker". Three separate doctors made three separate records of her smoking history, all different. I find it difficult to believe

that she would have been upfront and accurate with her smoking history when consulting with Dr Imran, even though her smoking history would clearly have been relevant to Dr Imran's diagnosis. In any case, even if she had conveyed what she had subsequently said on affidavit to Dr Imran, *ie*, she smoked from the age of 14 to 30 and had smoked about five cigarettes a day, I accept Dr Imran's evidence that she would still be considered very low risk.

72 It was thus reasonable for Dr Imran to conclude that her opacity was due to a garden variety infection in Singapore, such as tuberculosis, which was resolving on its own. Dr Breen similarly agreed that it was likely that the plaintiff's opacity was inflammatory or infectious. Even when reporting the December 2011 X-ray (see [10] above), Dr Yeong Kuan Yuen (the radiologist) opined that the ill-defined shadow was "likely to be the result of infection". Thus, (a) the plaintiff's lack of respiratory symptoms; (b) the resolving or resolved opacity in her lung, which was smaller than 3cm (and thus considered unlikely to be a malignancy); (c) her young age and (d) non-smoking history (as ascertained by Dr Imran and from the A&E record), were material pieces of information which supported Dr Imran's eventual diagnosis.

73 The plaintiff claims that Dr Imran should have sent the November 2007 X-ray for reporting and/or ordered a second chest X-ray or CT scan to confirm his diagnosis, or at least followed up with the plaintiff. She argues that there is a "cardinal medical principle" that the malignity of a nodule has to be assumed until it is confirmed to be benign. In relation to whether Dr Imran should have ordered a CT scan, the plaintiff relies on a 2005 paper referred to by Dr Teo, titled "Guidelines for Management of Small Pulmonary Nodules Detected on CT Scans: A Statement from the Fleischner Society" ("the Fleischner paper"), which mentions a "time-honoured" requirement to follow up on every

indeterminate nodule with a CT scan for a period of two years. However, first, the Fleischner paper itself suggested that this requirement should be revised. It also stated that management decisions should not be based on nodule size alone, but other features of the nodule. The plaintiff's nodule did not, in 2007, display any features indicating malignancy (see [36] above). Second, although the Fleischner paper referenced a Mayo Clinic CT Screening Trial, which the plaintiff relies on to show that there is a 50% likelihood of malignancy for nodules larger than 2cm, this was based on a screening trial with patients with drastically different demographics (aged above 50 and smoked one pack a day for 20 years). Further, even the authors in the trial concluded that the value of CT screening was unclear. Third, a CT scan is not entirely risk-free and had (in 2007-2010) the radiation exposure of 250-300 X-rays. Dr Breen agreed that a CT thorax scan posed risks for young women and Dr Teo explained that the thyroid and breast tissue were radio-sensitive and hence a doctor would think very carefully before ordering a CT scan for younger patients, especially those of reproductive age (such as the plaintiff). CT scans should not hence be seen as a matter of course for every indeterminate nodule. The Ministry of Health Clinical Practice Guidelines for Cancer Screening, published in 2010, also stated that low-dose CT scans were not recommended to screen for lung cancer. Finally, even though Dr Breen insisted on the need for a CT scan, he was not able to describe at any point in his evidence what such a CT scan would show and whether it would have made any difference to Dr Imran's assessment of the plaintiff's condition.

74 The plaintiff also relies on *Hucks v Cole* [1993] 4 Med LR 393 ("*Hucks v Cole*") for the proposition that when faced with a potentially lethal condition, a doctor should exercise caution and adopt precautionary measures, especially if they are inexpensive and readily available. However, the facts of *Hucks v Cole*

are readily distinguishable from the present. In *Hucks v Cole*, a doctor was held to be negligent for failing to prescribe penicillin to a patient suffering from septic places on her skin even though he knew that they were capable of leading to puerperal fever. There, the pathologist's report had signalled that a form of septicaemia infection was present and the expert evidence was that it should have been treated. Here, there no evidence that the plaintiff's nodule reflected an adverse risk to her health that could have been readily treated by certain medication or having certain steps taken.

75 Mr Rai also compares Dr Imran's treatment with that of A/Prof Sridhar, the respiratory specialist seeing the plaintiff in 2012, who had ordered a CT scan and recommended the plaintiff to undergo a biopsy. However, clinical diagnosis is made based on all the patient's presenting symptoms and history. The plaintiff consulted with A/Prof Sridhar under different circumstances, in particular where she had blood in her sputum and when her opacity had persisted for four years. She had also told A/Prof Sridhar of her smoking history. Her symptoms and history, as presented to A/Prof Sridhar, were thus significantly different from those presented to Dr Imran. I also note that although A/Prof Sridhar and Dr Chan (who reported the CT scan) recommended a biopsy, this was done in spite of the fact that they had assessed the nodule to be benign in nature. Thus, even in 2012, with worsening symptoms, the plaintiff's doctors did not think that the nodule in her lung was malignant. In the circumstances in 2007, I find that Dr Imran's diagnosis was reasonable. Given his diagnosis, I also find that there was no need to send the X-ray for reporting and/or to order a second chest X-ray (the November 2007 X-ray was already the second in two months).

76 However, I find that Dr Imran breached his duty by failing to arrange for a follow-up with the plaintiff to ensure that her opacity had completely

resolved. Dr Breen testified that even for a resolving opacity, follow-up was required to ensure complete resolution, unless there was almost complete resolution with a slight abnormality. In this case, Dr Imran noted that the opacity was resolving on its own but not completely resolved, as he was unable to clearly see the opacity on both views. Although I have found that his diagnosis was reasonable in all the circumstances, given the limitations concerning his viewing of the X-rays and the possibility of plaintiff suffering from tuberculosis or another infection,, it would have been reasonable for him to arrange for a follow up to satisfy himself that the plaintiff's infection had actually cleared. Even if he did not consider, reasonably so, that the plaintiff's nodule could have been malignant, on his diagnosis, the plaintiff was still suffering from an infection. In my view, it was not sufficient for him to simply give her an open date and advise her to return if she felt unwell, particularly because she would not know whether any future symptoms would be related to the nodule in her lung. No expert in Dr Imran's speciality was called to support Dr Imran's approach of simply giving the plaintiff an open date and advising her to return for a review if she was unwell or had any pain. I therefore find that in the circumstances stated herein and above, Dr Imran breached his duty by failing to arrange for the plaintiff to return for a follow up.

Dr Yap and Dr Soh

77 I move on to the third and fourth defendants. Dr Yap (the third defendant) and Dr Soh (the fourth defendant) attended to the plaintiff as doctors who were on duty in the Hospital's A&E department. The first question is hence whether and how the assessment of the breach of duty should be taken in the light of the features and limitations of emergency medicine practice.

(A) Assessment of breach in an A&E context

78 I start with the expert evidence. The only expert in emergency medicine called in this trial was A/Prof Mahadevan who heads the Emergency Medicine Department at National University Hospital ("NUH"). He has been an emergency medicine specialist for 17 years and supervises junior medial officers in his department. He is also a member of the residency advisory committee, the specialist body that oversees emergency medicine in Singapore. It was clear both from his qualifications and evidence on the context and standards of emergency medicine practice in Singapore that A/Prof Mahadevan was experienced and knowledgeable in this specialty. Although Dr Breen offered some opinions on Dr Yap and Dr Soh's management of the plaintiff, he conceded that he was not an emergency physician and had no expertise in that field. As mentioned above, the patients routed to Dr Breen are already suspected of specifically having lung cancer, and his main scope of work involves detecting and diagnosing lung cancer. The medical judgment calls Dr Breen makes, including the choice as to the tests to run and the relevant diagnoses to make, are significantly different from those an emergency medicine practitioner would be expected to make. His evidence thus has limited utility in determining the standard of care required of emergency medicine doctors. Thus, the only expert witness on emergency medicine practice was A/Prof Mahadevan. Although I am not bound to accept A/Prof Mahadevan's evidence solely because he was the only expert in emergency medicine practice called, I find that his evidence was based on proper grounds and supported by the basic facts, as well as the oral testimonies of the other doctors, and accordingly rely on his evidence to determine the standards expected of doctors in emergency medicine practice.

79 Emergency medicine deals with a wide range of patients and conditions but is fundamentally aimed at treating the acute deterioration of the patient's health, as compared to a deeper and more thorough investigation into the patient's ailments or possible diseases, which are more appropriately the province of outpatient clinics (such as general practitioners or specialist clinics) or other hospital departments. A/Prof Mahadevan explained that the A&E doctor's focus is to detect and exclude life-threatening conditions and primarily decide on whether the patient needs to be admitted to hospital for further treatment. Even when the patient is not admitted, the A&E doctor would, where necessary, route the patient to the Hospital's specialist outpatient clinics. This targeted approach to treatment means that the A&E doctor is not only unable to provide a more thorough assessment during the patient's visit, but is also unable to follow through with the patient.

80 Two other features of A&E practice in Singapore hospitals arise from the evidence, which were also recognised by the English High Court in *Mulholland v Medway NHS Foundation Trust* [2015] EWHC 268 (QB) ("*Mulholland*") at [6]. First, A&E departments process a high volume of patients and work under time constraints. Many of the patients visiting or sent to the A&E department are either trauma victims (from motor or industrial accidents) or are acutely sick (strokes or heart attacks) and require urgent treatment. However, there are patients who do not require urgent medical treatment who still attend at the A&E unit. The various groups of patients are managed via the triage process (see [81] below). The time for individual consultation with a patient is short as compared to an outpatient clinic. Dr Yap gave evidence (corroborated by Dr Lim, a senior consultant at the A&E department) that he and other medical officers in the emergency department worked eight-hour shifts and saw roughly 30 to 35 patients per shift. Each

consultation included taking a medical history, ordering the investigations required and sending the patients for these investigations, evaluating the results, coming to a diagnosis, and discussing any such diagnosis with a senior doctor.

81 Second, medical attention and treatment is delivered in a team-based manner and the respective tasks of junior and senior doctors depends on the severity of the condition of the patient. Patients would be triaged upon reaching the emergency department, meaning that they would be sorted according to the urgency of care required. A/Prof Mahadevan explained that there were three priority categories, with "priority 1" being patients in the most critical condition and most severely injured, requiring immediate attention. Patients triaged as "priority 2" were in less critical condition; those triaged as "priority 3" required the least urgent attention and would likely have to wait for a while before being attended to. The Hospital's emergency department was divided into two portions, one being an ambulatory area, meaning that patients came in by themselves, and this area would usually be designated as "priority 3". In this area, junior doctors such as locum medical officers, rotating officers and junior residents would attend to patients. These junior doctors were supervised by a consultant or senior doctor. They could seek out the supervising senior doctor, who was usually within earshot, for advice or consultation. A consultant would supervise four to five junior doctors. In the "priority 1" or "priority 2" areas, the patients tended to come in through emergency services (such as ambulances). Emergency care would be administered in a team-based manner and junior doctors would have to discuss with their senior doctors before making a decision on any patient.

82 I accept that there are limitations inherent in the provision of A&E healthcare. The environment in an emergency department was frequently

described by the witnesses as "high-stress, high-intensity" (Dr Lim), "time-critical" and "overwhelmed" with patients (A/Prof Mahadevan). However, this does not mean that the quality of care expected of A&E doctors should be lower, or that emergency medicine doctors can behave with impunity with the excuse that they are constantly operating under stressful conditions. Competent history taking and patient examination, for instance, are basic requirements for any doctor. In *FB (by her mother and litigation friend, WAC) v Princess Alexandra Hospital NHS Trust* [2017] EWCA Civ 334 ("*FB*"), a senior house officer was found to be negligent in not taking an adequate history and examination from a child patient's parents. The child was discharged instead of being referred to the paediatric team. As a result, her condition was not diagnosed till later and sustained permanent brain damage. The Court of Appeal held that even though the defendant was a senior house officer working in an A&E department, "history taking is a basic skill which hospital doctors at all levels are expected to possess" (at [64]).

83 Ms Kuah highlights (and Mr Lek relies) on the Hospital's adequate systems and safety nets in place to ensure that the standards and practices in the Hospital are effective and safe. First, there is a system whereby the medical officers in the A&E department would discuss their cases with senior doctors who would also review the medical officers' X-ray findings and provisional diagnosis. Second, the system of routine reporting of X-rays ordered at the A&E department. The radiology department would send the X-ray reports back to the A&E department within 24 hours for review by a senior doctor on duty at the A&E department. Any follow up of the X-ray report would be by the medical officer who attended to the patient or by the senior doctor on duty.

84 The plaintiff also rightly argues that if a doctor is aware of the limitations of the treatment he can provide in an A&E context, his duty may simply translate into sending his patients for follow-up consultations elsewhere instead of simply discharging them. As stated in *Jackson & Powell on Professional Liability* (John Powell QC and Roger Stewart QC gen eds) (Sweet & Maxwell, 8th Ed, 2017) ("*Jackson & Powell*") at [13-025], if a medical practitioner lacks the skill and experience to deal with a particular case, he should refer the matter to someone who is competent to deal with it. In my view, this equally applies to practitioners who, due to the circumstances in which they practice and the limits of their institution, are unable to provide the patient with more extensive care.

85 Ultimately, the focus and extent of care provided by emergency doctors can be calibrated with the understanding that emergency medicine practice fulfils a specific role in the healthcare industry, namely the provision of frontline treatment in instances of acute deteriorations of health, without compromising on the standards expected of an A&E doctor as any other medical professional. In my view, when assessing a doctor's breach of duty in an A&E context, these five non-exhaustive factors should be borne in mind:

(a) It is reasonable for A&E doctors to adopt a targeted approach to treatment, *ie*, to be primarily concerned with diagnosing and treating the immediate cause of a patient's acute deterioration in health rather than providing a general health screening of the patient, and determining whether the patient should be admitted, retained for further observation, or released (with or without follow-up arrangements).

(b) However, like any other medical professional, A&E doctors are still expected to make reasonable enquiries, take a history from the patient, conduct basic investigations and take reasonable care in

reaching their diagnosis, especially when diagnosing and treating a patient's presenting complaint: *Djemal v Bexley Health Authority* [1995] 6 Med LR 269 and *FB* at [64].

(c) The responsibility of A&E doctors for their patients' management and treatment should be assessed against the need to make speedy decisions and the rotational, shift-based nature of the work. Due to these difficulties, A&E doctors work in teams and in shifts.

(d) A&E departments also see a large number of junior doctors who have relatively less working experience. This is mitigated by the requirement for them to discuss their cases and seek approval of their intended treatment with a senior doctor on duty.

(e) A&E doctors should act with the awareness of the limitations of the treatment they can provide in an A&E context. As A&E doctors adopted a targeted approach to treatment in an A&E context, when they reasonably suspect that the plaintiff may have an underlying health problem which they are unable to fully investigate or diagnose, they should send the patient or advise the patient to go for follow-up consultations in other departments or clinics. The same position may be adopted in the case of incidental findings.

(B) Dr Yap's management of the plaintiff

86 The plaintiff alleges that Dr Yap breached his duty by (a) failing to refer the plaintiff to a respiratory specialist for follow-up but instead discharging her with painkillers and/or (b) failing to advise and inform the plaintiff of her "not insignificant risk of cancer". I have already found that (b) is really an allegation in relation to diagnosis as Dr Yap did not advise the plaintiff of her risk of cancer

simply because he had diagnosed her pain as musculoskeletal in nature and hence did not think that the plaintiff had a risk of cancer.

87 I start with my findings on Dr Yap's consultation with the plaintiff. On the night of 29 April 2010, the plaintiff went to the Hospital's A&E department complaining of right-sided mechanical chest pain which was worse when she breathed in deeply, causing her to feel breathless. She was triaged as priority 2 (*ie,* medium priority; see [81] above) and Dr Yap attended to her within ten minutes. He noted that her general condition was good, that she was able to speak in full sentences and had clear and equal breath sounds. The Emergency Department Record states:

> Main Diagnosis: 780 MSK CHEST PAIN
>
> …
>
> Disposal: 1 Treated and Discharged
>
> …
>
> **Doctor's Notes**
>
> ECG – NSR
> CXR – SUSPICIOUS NODULE R MZ
> DW DR MOHAN – FOR XR REPORT, RECALL PATIENT IF NECESSARY
> EXPLAINED ABOVE TO PATIENT, SHE UNDERSTANDS
> TO RETURN IF PAIN WORSEN OR FEVER PERSIST

88 Dr Yap gave evidence that he ordered the April 2010 X-ray for her presenting complaint of chest pain. He observed as an incidental finding the presence of a suspicious nodule over the right mid-zone of the plaintiff's chest (referred to as "R MZ") from the April 2010 X-ray (referred to as "CXR", *ie*, chest X-ray, in the doctor's notes). He claims that he then accessed the patient's medical records from the hospital's online portals, which showed that the plaintiff had previously consulted Dr Imran and also the October and November 2007 X-rays. Although Dr Imran's notes were not available through the portal,

Dr Yap states that the plaintiff told him about the consultation with Dr Imran and Dr Imran had told her that she was fine, although this is not recorded in the doctor's notes and the plaintiff testified that she did not recall this. I accept Dr Yap's evidence that he had asked the plaintiff about her consultation with Dr Imran as part of his investigations regarding the nodule and as part of history-taking.

89 Based on the above, the fact that the plaintiff's pain had begun only around an hour before the consultation, and that the nodule appeared stable, Dr Yap concluded that the plaintiff's pain was not attributable to the nodule but musculoskeletal in nature, perhaps from muscle strain or inflammation. He discussed the case with the senior consultant on duty, Dr Mohan Tiruchittampalam ("Dr Mohan"), showing him the April 2010 X-ray and previous X-rays. He informed Dr Mohan that the plaintiff had been previously seen by Dr Imran in 2007. Dr Mohan agreed with Dr Yap's interpretation that the nodule appeared stable and also his diagnosis of musculoskeletal chest pain. He instructed Dr Yap to send the April 2010 X-ray for reporting and recall the patient if necessary. The plaintiff argues that there are no details of the discussion between Dr Mohan and the plaintiff in the doctor's notes and Dr Mohan was not called as a witness. On this basis, the plaintiff invites the court to draw an adverse inference that Dr Mohan's evidence would not have corroborated Dr Yap's account. I accept Dr Yap's evidence that he had consulted with and reached his decision with Dr Mohan. The Emergency Department Record corroborates Dr Yap's claim that he had discussed with Dr Mohan ("DW" referred to "discussed with"), and that resulted in a decision to send the X-ray for reporting and recall the patient if necessary. Although it would have been preferable to have Dr Mohan on the stand for the details of the discussion, I find that the contemporaneous doctor's notes and Dr Yap's oral

evidence that he had informed Dr Mohan of the plaintiff's previous X-rays and previous consultation with Dr Imran to be credible and consistent with the eventual decision to send the X-ray for reporting and recall the plaintiff if required.

90 On the presenting symptoms on that occasion, Dr Yap diagnosed the plaintiff with musculoskeletal chest pain and discharged her with painkillers. I find that he informed the plaintiff of the nodule and advised her that a radiologist would review the X-ray and recall her if necessary. This is corroborated by the Emergency Department Record stating the same (see [87] above). He also advised her to return if her chest pain worsened or if her fever persisted. The April 2010 X-ray was sent for reporting and was reported a day later, although Dr Yap testified that he did not personally receive this report.

91 I find that Dr Yap did not fall below the applicable standard of care. First, it must be emphasised that the nodule in the plaintiff's lung was, in the case of Dr Yap, an incidental finding arising from the April 2010 X-ray which Dr Yap reasonably determined was unrelated to the plaintiff's presenting complaint, *ie*, her chest pain and shortness of breath. The chest X-ray was ordered to examine the plaintiff's presenting complaint of chest pain and to exclude any life-threatening conditions, and not to follow up on the nodule. His own assessment that night that there had been no clinically significant change in the size of the plaintiff's nodule since the November 2007 X-ray and that the nodule possessed no other obvious signs of malignancy was supported by other doctors, such as Dr Rameysh, the radiologist who reported the April 2010 X-ray, and Prof Goh. Further, A/Prof Mahadevan testified that A&E doctors were not expected to measure opacities on X-rays during their consultations due to time constraints and I accept that it was reasonable for Dr Yap to have assessed

the nodule without measuring it the way a radiologist would have. Dr Yap also rightly relied on the facts that the plaintiff was young, had no symptoms of lung cancer, no weight loss, and that her other symptoms were related to her presenting complaints, to conclude that her pain was unlikely to be caused by the nodule and was musculoskeletal in nature. Given his diagnosis, there was no clinical basis to send the patient for further investigations or to arrange for a further consultation with a specialist. Dr Yap's assessment was fully supported by A/Prof Mahadevan and was in line with a responsible body of medical opinion.

92 Second, Dr Yap had noted the previous consultation with Dr Imran and discussed it with the plaintiff. I accept A/Prof Mahadevan's opinion (which I find to be logical and defensible) that since Dr Yap was aware that the nodule was a known finding and the plaintiff had been seen by a respiratory specialist in 2007, it was reasonable for him to conclude that an assessment had been done and the patient had been discharged from respiratory follow-up because her condition was not serious, and this had been confirmed by the plaintiff saying that Dr Imran had told her that she was fine. I do not see the usefulness of comparing Dr Yeo's referral of the plaintiff to Dr Imran and Dr Yap's discharge of the plaintiff as relevant to the issue of breach. Having independently assessed that there had been no significant change to the nodule since 2007, I find that it was reasonable for Dr Yap to decide that a referral back to a respiratory specialist outpatient clinic was unnecessary unless the radiologist's report suggested otherwise.

93 It bears note that Dr Yap's assessment of the nodule as stable turned out to be correct and consistent with the radiologist's assessment, even though this

was not known to him at the material time. The April 2010 X-ray report was prepared by Dr Rameysh and stated that:

> A rounded opacity… is seen in the [right] mid zone, which appears stable since the previous chest radiograph [in November 2007]. This is non specific and is indeterminate in nature. A follow-up radiograph may be performed for assessment of interval stability. The rest of the visualised lung parenchyma shows no significant abnormality …

94 Dr Rameysh's report shows that he considered the nodule to be stable and suggested that a follow-up radiograph be performed only for the purposes of assessing interval stability, and not because malignancy was suspected. Further, the evidence from the medical literature and Prof Goh was that a nodule, being a non-calcified pulmonary nodule (as in the present case), would have been assumed to be benign by a reasonably competent doctor if it had exhibited interval stability, *ie*, was found to be stable over a period of two years using X-rays. Dr Breen, the plaintiff's expert, agreed with this in principle, although he testified that the nodule should only be considered stable if it had displayed no change at all or if there is calcification in the nodule. I have already found that a nodule can be considered stable if it displays only slight or marginal increase in growth, and Dr Breen himself accepted that a nodule's stability would be better assessed by a radiologist. From 2007 to 2010, the plaintiff's nodule displayed such interval stability. This would have led to a conclusion that the nodule was benign in nature. Although the plaintiff argues that her cancer could have been slow-growing, as Dr Teo explained, the knowledge that that slow-growing tumours are not necessarily benign is relatively new, and this point applies *a fortiori* to indolent ALK-positive cancer, as ALK-related cancer was relatively unchartered territory at or about the time when the plaintiff's cancer was discovered.

95 Third, I find that Dr Yap's decision to have the X-ray reported and wait for its results before any further clinical decision was made, which was fully supported by A/Prof Mahadevan, to be reasonable. The plaintiff argues that Dr Yap should have referred her back to Dr Imran or another respiratory specialist, given that Dr Imran had already given the plaintiff an open date to return to the clinic. I agree with A/Prof Mahadevan that it was entirely reasonable for Dr Yap to wait and see whether or not the radiologist had any concerns with the X-ray, before taking the decision as to whether to recall the plaintiff and/or refer her back to the specialist. There could have been a variety of radiological findings and differential diagnoses for the plaintiff's lung nodule, and it was eminently sensible to wait for the radiological report to help in the assessment of the plaintiff's condition and aided the clinical decision. Further, a doctor should not always be expected to refer a patient back to his specialist as a matter of course, especially when he reasonably believes (as did Dr Yap) that the specialist has already assessed the nodule and it has displayed no significant change and no obvious malignancy since the last assessment.

96 Fourth, it was also reasonable for Dr Yap to send the April 2010 X-ray for reporting without *personally* following up on it, relying on the Hospital's processes that X-rays with clinically significant abnormalities would be sent back to the A&E department and assessed by a senior doctor on duty. The plaintiff is therefore wrong to argue that Dr Yap was negligent in only relying on his limited time and diagnostic resources in an A&E setting. Dr Yap knew and relied on the fact that the radiology department would report the X-ray and return it to the A&E department if follow-up was required. In *Mulholland*, Green J found (at [95]-[96]) that the A&E department "could not function sensibly without mutual reliance on the professionalism of others involved in the overall A&E process". Doctors in the A&E department work on shifts and

reasonably rely on the hospital's processes and each doctor performing their own role when they are on duty. It would be onerous and incompatible with the Hospital's allocation of responsibilities for each A&E doctor to have to personally follow up with every patient they see, given the high volume of patients and the targeted approach adopted in the A&E department.

97 Fifth, in relation to whether Dr Yap should have ordered a CT scan for the plaintiff, I again find that it was reasonable for Dr Yap to have delayed any such decision until the X-ray had been reported, so that a fuller assessment could be made. In any event, given Dr Yap's assessment of the nodule and his diagnosis that the plaintiff's presenting complaint was unrelated to the nodule in her lung (see [91] above), there was simply no symptoms to indicate at the time of the plaintiff's consultation that a CT scan was appropriate or required. Further, the use of CT scans in the Hospital's A&E department at the material time was limited to urgent or emergent cases such as strokes, major trauma and other vascular emergencies requiring immediate imaging. The A&E department also did not have CT scanners in 2010 and 2011 and patients requiring it would have to be sent to the main hospital block where the radiology department was. I accept A/Prof Mahadevan's evidence that the plaintiff would not have been considered a patient urgently requiring a CT scan.

98 Finally, even if Dr Yap had been wrong or hasty in his diagnosis, he nevertheless discharged his duty by seeking confirmation and advice from his senior doctor, Dr Mohan. Although the standard of care for junior doctors is the same as that of a senior, more experienced doctor professing to have the same skill and competence in A&E, a junior doctor who seeks the advice and help of the senior doctors would often have satisfied the test: *Wilsher v Essex Area Health Authority* [1987] 1 QB 730 ("*Wilsher*") at 774C-H. This is especially

relevant in the A&E context as it is common for junior doctors to train and gain experience in A&E departments in Singapore hospitals, under the supervision of more senior doctors. Dr Yap was, at the material time, working as a junior doctor under the supervision of the senior consultant on duty, Dr Mohan. All decisions for patients in the priority 2 category needed to be referred to the senior doctor on duty, and Dr Yap accordingly discussed and confirmed his diagnosis and proposed treatment with Dr Mohan. Whether Dr Mohan made the right decision or had otherwise failed to fulfil his duty to the plaintiff is beyond the remit of this case, as the plaintiff not sued Dr Mohan.

99 For the reasons above, I find that Dr Yap met the professional standard of care. For the plaintiff's presenting complaints, he discharged the plaintiff with painkillers and advised her to return if the pain worsened or the fever persisted. In relation to the incidental finding of the plaintiff's nodule, he reasonably assessed that it was unrelated to her presenting complaints, diagnosed it as stable but sent the X-ray for reporting for confirmation of the nodule by a radiologist.

(C) Dr Soh's management of the plaintiff

100 Around a year after the plaintiff's consultation with Dr Yap, the plaintiff again visited the Hospital's A&E Department on the night of 31 July 2011 and was seen by the fourth defendant, Dr Soh. She complained of *left* lower ribcage pain that had persisted for almost one month, and was triaged as priority 3 (lowest priority). Dr Soh attended to her within the hour.

101 Dr Soh gave evidence that given the complaints of pain, he focused on ruling out life-threatening cardiac causes of acute coronary syndrome, rib fractures, pneumothorax, pulmonary embolism and infective changes. He

ordered a chest X-ray in erect and left oblique views ("the July 2011 X-ray") and an ECG. He scanned the X-ray for major abnormalities and moved to the area of concern, namely the lower left ribcage, which did not show any rib fractures or abnormalities. Due to his focus on the left chest, he did not notice the plaintiff's nodule in the right chest. He thus provisionally diagnosed the plaintiff's pain as "costochondritis", namely pain of a musculoskeletal origin.

102 Being a junior medical officer, he discussed the case with Dr Lim (this is reflected in his contemporaneous notes in the Emergency Department Record), the supervising consultant on duty. Dr Soh then discharged the plaintiff with oral and topical analgesia (to relieve the pain) and asked her to return if her symptoms worsened or persisted.

103 The plaintiff provides a different account of her consultation. She testified that Dr Soh had noticed and highlighted to her that there was something on her right lung, asked whether she had any tattoos on her right chest, but told her that her problem was the inflammation of the ribs. She subsequently conveyed this to Dr Wong, who recorded that during a consultation in December 2011, the plaintiff told him that during her visit to the Hospital in July 2011, "the emergency [medical officer] noted a shadow in [her] right mid zone but thought was smaller, but was asymptomatic at the time".

104 I find Dr Soh's account to be more credible than the plaintiff's and consistent with the objective facts. First, without yet deciding whether it was reasonable to do so, I accept Dr Soh's explanation that he did not notice the nodule as he was focused on the lower left area of the chest. This was why he ordered an X-ray image in the left oblique view. Both Dr Lim and Dr Soh testified that the nodule in the plaintiff's right lung could not be seen in the left

oblique view X-ray image. Although the nodule could be seen in the erect view, and was seen by everyone at the time of trial, I would not assume that Dr Soh, without the benefit of hindsight, would have been able to spot it in July 2011, during the A&E consultation. His admission was also more credible as it was not obviously to his benefit, since he could be blamed for his oversight when two other A&E doctors had been able to spot the nodule. Second, although the plaintiff relies on Dr Wong's notes, these only show that the plaintiff stated in December 2011 that Dr Soh had mentioned a shadow in her right lung. Dr Wong was not present at the Hospital and his evidence as to what happened there would be hearsay. Third, even if Dr Soh did ask whether the plaintiff had a tattoo on her right chest, it was unlikely to be because he saw the nodule, given that tattoos (being ink on the skin) would not usually show up in an X-ray (assuming he did ask). Dr Teo also testified that tattoos could only be seen on X-rays in a very limited situation, *ie*, when they had radio-opaque elements such as metal, and she had never seen a tattoo appearing on an X-ray. Fourth, I accepted as plausible Dr Soh's argument that the plaintiff could have mixed up her consultations with Dr Yap and Dr Soh, especially given that she did not remember being told about the nodule during her consultation with Dr Yap even though it was recorded in the doctor's notes and supported by Dr Yap's evidence, which I have found to be credible, that he had explained the presence of the nodule to her (see [87] and [90] above).

105 The July 2011 X-ray was reported a day after the plaintiff's consultation. The report stated that the "opacity in the [right mid zone] is again noted", was slightly larger as compared to that captured in the April 2010 X-ray, "non-specific in nature and largely stable since the previous study". Follow up of the lesion was suggested. Dr Soh did not personally receive the report and there was no follow up on this X-ray in the Hospital's records.

106 I move on to the assessment of breach. The principal difference between Dr Soh's case and Dr Yap's was Dr Soh's failure to notice the nodule on the X-ray. The plaintiff argues that a reasonable A&E doctor, trained to read and interpret X-rays, ought to be able to identify major abnormalities in an X-ray, such as the presence of a nodule. The nodule on the plaintiff's right lung in the mid zone area was only a few inches away from Dr Soh's area of concern, namely the plaintiff's left ribcage. In particular, both Dr Yeo and Dr Yap, who had attended to the plaintiff, had been able to spot the nodule, notwithstanding that they also ordered and viewed the X-ray in an A&E context and determined that it was unrelated to the plaintiff's presenting complaint.

107 Having considered the plaintiff's arguments, I find that Dr Soh did not fall below the applicable standard of care by failing to notice the nodule in the plaintiff's right lung as he had focused on the plaintiff's presenting complaint (left rib pain). The distinction between an A&E doctor's responsibility for an incidental finding and the patient's presenting complaint (see [85(a)] above) is again emphasised. Given the purpose of the A&E department to deliver emergency front-line treatment, the high numbers of patients, the accordingly short time allocated to each consultation and the limited facilities available at the A&E department, an A&E doctor's primary focus is to diagnose and treat the plaintiff's presenting complaint. He is not expected to make findings beyond what he reasonably deems is required to treat the plaintiff's presenting symptoms. With this in mind, I find that it was reasonable for Dr Yap to have focused on the plaintiff's left lower chest given her complaint of pain in that area, as opposed to other areas of her chest. He ordered the X-ray in the left oblique view for this purpose (where the nodule could not be seen). Dr Lim also testified that it was unlikely that the pain on the plaintiff's left rib could have radiated from the plaintiff's right lung.

108 A/Prof Mahadevan supported Dr Soh's targeted approach towards the plaintiff's presenting complaint, focusing on the plaintiff's left chest to look for a cause of the pain, which was chronic, by focusing on a rib injury or a burst lung. He also emphasised that Dr Yeo (who saw the plaintiff in 2007 and spotted nodule) and Dr Soh's consultations were "two very different clinical scenarios" with very different approaches to the problem, and should not be validly compared. Dr Soh focused on the plaintiff's left chest with a presumptive diagnosis of costochondritis. Thus, his consultation was focused on excluding possible diagnoses for the plaintiff's month-long left-sided chest pain, such as pulmonary embolism, a missed fracture of the ribs, bone erosion, pneumothorax or burst lung. This was distinct from Dr Yeo's first consultation in 2007 with the plaintiff, where she presented with lower central chest pain which was rather non-specific in nature. In the first consultation with Mr Yeo, he took a more holistic approach to the situation back in 2007 and spotted the nodule in the X-ray.

109 Further, A/Prof Mahadevan also observed that there was inadequate inspiration on the July 2011 X-ray and that there were many other white structures within the black lung field which could be confused as abnormalities. It was hence understandable that Dr Soh might have missed the nodule without the benefit of hindsight, and the possibility of such discrepant findings is precisely the reason why routine reporting is carried out for all X-rays, which is what I come to now. Dr Soh was fully aware that the July 2011 X-ray would be reported in the usual manner and any abnormal findings would be routed back to the A&E department, with a clinical assessment being made on the basis of the report by the doctor on duty. Like Dr Yap (see [95]-[96] above), he was fully entitled to rely on this system. The same reasoning applying to Dr Yap would

also apply in relation to the lack of need to order a CT scan until the results of the X-ray report were out.

110 Finally, even if Dr Soh had made a mistake in not picking up on the nodule, he would have fulfilled his duty of care by explaining and confirming his diagnosis and treatment of costochrondritis with his senior doctor on duty, Dr Lim. Dr Soh testified that he could not specifically recall what was discussed, but stated that as a matter of routine, he would inform the supervising consultant of the patient's history, his observations during physical examination, diagnoses, results of any investigations (*ie*, the X-ray) and a provisional diagnosis and treatment plan, and Dr Lim agreed with him. Dr Lim stated that although he could not recall the precise consultation, given the plaintiff's history, examination, complaints, and absence of other symptoms, he would have considered Dr Soh's diagnosis of costochrondritis as fair and reasonable and agreed to the treatment plan. He reviewed the X-rays personally and similarly did not notice the nodule in the plaintiff's right lung. I accept their evidence, which is consistent with the Hospital's A&E department's work process. As mentioned at [98] in relation to Dr Yap, a junior medical officer who actively checks his work with his senior doctor and confirms his diagnosis and treatment plan will generally be taken to have met the applicable standard of care, and I so find in the present case.

The Hospital

111 I now move on to the Hospital's alleged breaches. The plaintiff's allegations as to the Hospital's breach of duty take two forms. The first is that the individual doctors (*ie*, the second to fourth defendants) were negligent in attending to the plaintiff. The Hospital does not dispute as a matter of principle that it would be liable for the negligent acts of Dr Imran, Dr Yap and Dr Soh.

That said, the legal basis upon which the plaintiff seeks to establish the Hospital's liability is unclear from the pleadings. The liability of a defendant for another person's torts can be based on a variety of doctrines, such as vicarious liability, agency principles, or the existence of a non-delegable duty. Mr Rai, on behalf of the plaintiff, submits that it is trite law that hospitals would be vicariously liable for their doctors' torts if the doctors committed such torts during the course of their employment, but did not actually plead vicarious liability. He appears to contend instead that the Hospital owed the plaintiff a non-delegable duty of care and was thus directly liable for the second to fourth defendants' negligence.

112 The principle that hospitals owe their patients non-delegable duties has not yet been expressly endorsed in Singapore. The Court of Appeal in *Management Corporation Strata Title Plan No 3322 v Tiong Aik Construction Pte Ltd and another* [2016] 4 SLR 521 ("*Tiong Aik*") formulated a two-stage test for determining whether a non-delegable duty would arise on a given set of facts, namely (a) whether the case fell within an established category of non-delegable duties or possessed the five features outlined in *Woodland v Swimming Teachers Association* [2014] AC 537 ("*Woodland*") and (b) if so, whether it would be fair and reasonable to impose such a duty (*Tiong Aik* at [62]). It was further observed (at [47(a)]) that in other jurisdictions such as the United Kingdom, hospitals and health authorities have been held to owe non-delegable duties to their patients, although the High Court in *Hii Chii Kok v Ooi Peng Jin London Lucien and another* [2016] 2 SLR 544 left the question open. The Court of Appeal also cautioned that whether Singapore law should recognise a non-delegable duty in such a scenario "[remained] to be decided should the appropriate case come before our courts" (*Tiong Aik* at [48]).

113 On the question whether the Hospital should be held to owe a non-delegable duty of care to the plaintiff in respect of the healthcare services provided to her by Dr Imran (as part of the Hospital's specialist outpatient clinic), Dr Yap and Dr Soh (as part of the Hospital's A&E department), it is not necessary to decide on the matter since the Hospital does not dispute that it could be made vicariously liable for the negligence of the defendant-doctors. I also note that the Court of Appeal has twice declined to decide or discuss this point where it is unnecessary to do so for the disposal of the case before it (*Tiong Aik* at [48] and *Hii Chii Kok* at [222]). Since I have already found that causation is simply not made out in the plaintiff's case, and the plaintiff's claim in negligence thus fails, it is a moot question whether Singapore should recognise a non-delegable duty in this scenario. Besides, without the benefit of detailed argument by both parties (the Hospital does not contest the issue), I leave the question of whether a hospital owes non-delegable duties to its patients for a future court to fully address.

114 I now turn to the second form of breach that the plaintiff alleges, namely, that the Hospital failed to provide a safe system of healthcare. I note that this has nothing to do with the issue of whether the Hospital owes a non-delegable duty to the plaintiff. A hospital can be held directly liable in negligence for such its own organisational failure, which may include failing to provide suitable medical facilities and equipment or doctors with sufficient skill and experience, or failing to implement safeguards in its system or to supervise its staff: see *Clerk & Lindsell* at [10-93] and *Wilsher* at 465. The Hospital similarly does not dispute that such liability may exist in principle.

115 The plaintiff's submissions primarily relate to Hospital's provision of radiological facilities and services (*ie*, the reporting, handling and processing of

X-rays). I find that most of her claims have no merit, save for the plea that the Hospital breached its duty by failing to have a patient notification system to inform the plaintiff of the results and findings in her X-ray report.

116 The plaintiff claims that the Hospital did not establish an adequate system for the reporting of X-rays and for follow up on abnormal radiological findings. The Hospital did not implement routine reporting for X-rays until 2010. This meant that the November 2007 X-ray ordered by Dr Imran would not have been reported unless requested. The October and November 2007 X-rays were only retrospectively reported in 2012. I have already found that it was reasonable for Dr Imran to not send the X-ray for reporting (see [75] above). Mr Rai does not argue that it was a breach of the Hospital's duty not to have routine reporting in 2007. Even if he does, he has failed to adduce any evidence showing that this was the standard in the healthcare industry or that it was otherwise an unreasonable system. There is thus no basis upon which to find a breach of duty. By 2010, routine reporting was implemented and the April 2010 and July 2011 X-rays (ordered by Dr Yap and Dr Soh respectively) were accordingly sent for reporting. The Hospital has produced both reports, each dated only a day after the X-rays were taken. Dr Teo opined that the 24-hour turnaround time was reasonable and I agree with her.

117 The plaintiff argues that the Hospital breached its duty by failing to route the radiological reports back to their ordering doctors. It was not disputed that neither Dr Yap nor Dr Soh received the plaintiff's radiological reports. The Hospital instead contends that although the reports were not routed back to Dr Yap and Dr Soh, they had implemented a safety net by ensuring that (a) reports with abnormal radiological findings would be routed back to the relevant department (in this case, the A&E department) and (b) such reports would be

reviewed by the senior doctor on duty ("the reviewing doctor"), who would decide whether to recall the patient. This was evidenced by a set of the Hospital's work instructions in 2011, titled "Notification of Critical Results by Radiology Department". Dr Andrew Tan testified that there was already such a process in place prior to the work instructions but the document was created to include an additional layer of action to be taken for radiological reports with more critical findings. Abnormal findings would be classified from level 3 to level 5. The plaintiff's April 2010 and July 2011 X-rays would have been a level 3, *ie*, with clinically significant abnormalities. Such reports would then be marked out and sent back to the relevant department. The essential elements of this process were corroborated by various witness, including Dr Rameysh (who reported the April 2010 X-ray), Dr Khoo (a diagnostic radiologist working in the Hospital), Dr Yap, Dr Soh and Dr Lim (from the A&E department). I hence find that there was such a work process, and agree with Dr Teo that it was a reasonable process and would fulfil the Hospital's duty of care towards the patient in ensuring that abnormal radiological findings were noted and followed up on. In particular, given that the radiological reports would not be available the same night, it was reasonable to discharge the patient first and recall her if necessary. It was also reasonable for another doctor to review the radiological report as doctors in the A&E department worked in shifts (this would have ensured that the reports were reviewed timeously) and they would also have access to the patient's medical file.

118 The next question is whether this process was in fact carried out in the plaintiff's case. There was a gap in the evidence because (a) the X-ray request forms, which the radiologists would have stamped "Attention" on and routed back to the relevant department if the radiological findings had been abnormal, had been disposed of six months after the X-rays and were unavailable; and (b)

there was no record of the senior doctor who had reviewed the X-ray and made the clinical decision not to recall the plaintiff. Despite this, I find on a balance of probabilities that such a process was indeed carried out in the plaintiff's case. First, as seen in the abovementioned paragraph, various witnesses testified to the Hospital's work process for handling X-rays and there was nothing to suggest that such a process was not implemented as a matter of fact. I accept the Hospital's explanation that the X-ray request forms had been disposed of and were simply unavailable. Second, it was entirely plausible that the reviewing doctor's decision would have been not to recall the plaintiff, given that both radiological reports had stated that the nodule was stable. Although they suggested follow-up, the April 2010 X-ray report only suggested it for assessment of interval stability. Further, the reviewing doctor would have access to more information on the plaintiff, such as her young age and lack of symptoms. Thus, I find it more likely than not that the reporting and routing process had been carried out and the reviewing doctor had taken the clinical decision not to recall the plaintiff. The Hospital hence did not breach its duty of care towards the plaintiff in this respect.

119 However, I find that the Hospital breached its duty of care by failing to send the April 2010 and July 2011 X-ray reports with its findings to the plaintiff following her consultation with Dr Yap and Dr Soh, or otherwise failing to communicate the findings of the X-ray reports to the plaintiff, even after the reviewing doctor had assessed that there was no need for further follow-up. The plaintiff pleaded that the Hospital breached its duty in not informing her of the results of her X-ray reports, and I find that this was a weakness of the Hospital's routine reporting system, which the Hospital constantly claims is a key safety net to ensure accurate radiological findings and diagnoses. The system of routine reporting was implemented precisely to ensure that abnormal findings

would be looked into. It is the Hospital's case that routine reporting was an integral safety net, especially for doctors in the A&E department who did not have opportunity to thoroughly examine the X-ray for abnormalities. This also means that the results of such X-ray reports are a significant part of the diagnosis and management of the Hospital's patients.

120 That being the case, as part of this safety net, the Hospital should have had a patient notification system to inform the plaintiff of the results of her X-ray report, *even if it had decided that there was no need for further follow-up*. I accept that it was not feasible to discharge the patient only after the X-ray had been reported, especially when the A&E doctor had diagnosed the plaintiff and treated her based on his diagnosis of musculoskeletal pain and costochondritis. I have also found (at [117]-[118] above) that the Hospital did not fall below its applicable standard of care in having the reports routed back to the A&E department for review by the ordering doctor or a senior doctor on duty.

121 However, it would only be reasonable for the plaintiff to be notified of the results of such reports and of the clinical decision made as to her condition as part of the doctor's communication of his diagnosis, and so as to enable the patient to be informed of her condition and take the decision as to whether to return to the Hospital for consultation, seek a second opinion elsewhere or to do nothing. This is especially so for Dr Yap, who had in fact personally requested that the plaintiff be sent the X-ray report. The Emergency Department Record stated, under the section on disposal, "send [chest X-ray] for reporting" and "please mail report to patient". Next to it was "noted". Despite this, there is no evidence that the report was eventually mailed to the plaintiff or that there was any system in place to relay the results of the report to the plaintiff. Given that Dr Yap had advised her that there was a nodule in her lung and that the report

would be sent for reporting and she would be recalled if necessary, and presumably (from the Emergency Department Record) the plaintiff had asked for or otherwise been promised the X-ray report, it was only reasonable for the Hospital to have at least sent the report to the plaintiff so that she had knowledge of its contents. The April 2010 X-ray report in fact stated that a follow-up radiograph could be performed for interval stability and the July 2011 X-ray report suggested follow-up. The plaintiff should have been informed of the contents of the reports, such that even if the reviewing doctors did not think (reasonably so) that follow-up was warranted, she could seek a second opinion if she so wished.

122 How the patient notification process should be carried out in these cases depends on the circumstances. It may be sufficient simply to email the report to the patient, or, in other cases, a follow-up consultation to explain the findings to her may be required. In determining this, I return to the distinction between an incidental finding and a presenting complaint (see [85(e)] above). If the finding is related to or has an impact on the patient's presenting complaint, it may be part of the Hospital's duty to call the patient back to explain the findings to her, notwithstanding that no further intervention is assessed to be required. If the finding is incidental to her presenting complaint, and it has been assessed to not require clinical intervention, it is sufficient to simply email the report to the patient to ensure that she has a copy of her X-ray report, the clinical decision made, and the choice as to whether to seek further medical assistance.

Conclusion on breach

123 In relation to the defendants' duty of care, I find that:

(a) Dr Imran had breached his duty towards the plaintiff by failing to recall her for a follow-up to ensure that her opacity had completely resolved.

(b) The Hospital had breached its duty of care towards the plaintiff by failing to inform her of the results of her X-ray reports (*ie*, for the April 2010 and July 2011 X-rays) and the clinical decision made thereto as to her condition.

(c) Dr Yap and Dr Soh had not breached their duty of care towards the plaintiff.

However, given my findings on causation, there are no causative breaches by Dr Imran and the Hospital. In the circumstances, the plaintiff's action in negligence fails against all the four defendants .

Conclusion

124 The plaintiff's action against all the defendants is dismissed. I will hear parties on costs. The parties are to exchange their respective submissions on costs (including on quantum seeing that the parties have submitted their costs schedules) within 21 days hereof. Such submissions shall be limited to 3 pages each.

Belinda Ang Saw Ean
Judge

Vijay Kumar Rai (Engelin Teh Practice LLC) for the plaintiff;
Kuah Boon Theng, SC, Karen Yong and Samantha Oei (Legal Clinic LLC) for the first defendant;
Lek Siang Pheng, Vanessa Lim, Yvonne Ong and Audrey Sim (Dentons Rodyk & Davison LLP) for the second to fourth defendants.
