IN THE COURT OF APPEAL OF THE REPUBLIC OF SINGAPORE

[2019] SGCA 13

Civil Appeal No 47 of 2018

Between

NOOR AZLIN BINTE ABDUL RAHMAN

… *Appellant*

And

(1) CHANGI GENERAL HOSPITAL PTE LTD
(2) IMRAN BIN MOHAMED NOOR
(3) YAP HSIANG
(4) SOH WEI WEN JASON

… *Respondents*

In the matter of 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] — [Doctors]

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

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17 October 2018

26 February 2019 Judgment reserved.

Andrew Phang Boon Leong JA (delivering the judgment of the court):

Overview

1 This is an appeal against the decision of the High Court judge ("the Judge") in *Noor Azlin Binte Abdul Rahman v Changi General Hospital Pte Ltd and others* [2018] SGHC 35 ("the Judgment"). At the heart of the Appellant's case is the allegation that the three doctors who attended to her (over a four-year period) as well as the hospital at which they worked were negligent. The Appellant argues that their negligence had ***delayed*** the detection of the malignancy which resulted in the lung cancer she is presently afflicted with, and caused her to suffer the loss of a *better* medical outcome.

2 Two of the doctors who attended to her were doctors from the Accident and Emergency ("A&E") department – the Third Respondent, Dr Yap Hsiang ("Dr Yap") and the Fourth Respondent, Dr Soh Wei Wen Jason ("Dr Soh"),

respectively. Dr Yap attended to the Appellant in the A&E department on *29 April 2010* whilst Dr Soh attended to her in the same department about a year later on *31 July 2011*.

3 The third doctor was the Second Respondent, Dr Imran bin Mohamed Noor ("Dr Imran"). He is a specialist respiratory physician who attended to the Appellant in the hospital's specialist outpatient clinic ("SOC") on *15 November 2007*.

4 By way of the briefest of backgrounds in the present broad overview, the Appellant had in fact first visited the *A&E department* of the hospital on *31 October 2007*, on which occasion she had complained of lower chest pain and shortness of breath. A chest X-ray was ordered and an opacity in the right mid-zone of the Appellant's chest was noted. As a result, the Appellant was, *inter alia*, referred to the SOC where she was attended to by Dr Imran.

5 We pause to note that the fact that Dr Yap and Dr Soh on the one hand and Dr Imran on the other belonged to *different* medical specialities (and hence different departments of the hospital) is significant in so far as ***the standard of care*** they had, respectively, to observe *vis-à-vis* the Appellant is concerned.

6 The First Respondent is the hospital itself, Changi General Hospital ("CGH"). In this particular regard, we note that the possible liability of CGH may be viewed from *two perspectives*. The *first* is by way of *primary* liability for negligence if the Appellant could demonstrate, on a balance of probabilities, that CGH was negligent because of the ***system*** which it had in place at the material time. The *second* is by way of *secondary* liability for the negligence of Dr Yap, Dr Soh and/or Dr Imran, provided of course that such negligence on

the part of one or more of the aforementioned doctors could be established (again, on a balance of probabilities).

7 Before we conclude this extremely brief overview, we note that one major issue in the court below that impacted *all* the defendants (the Respondents in the present appeal) was the issue of ***causation***. Put simply, *even assuming* that one or more of the Respondents could be demonstrated to have been negligent, could such negligence be considered to have ***caused*** the ***delay*** in diagnosis and any consequential damage which forms the bedrock or centrepiece of the Appellant's case? In this regard, the *key finding* by the Judge in the court below was that, *even if* negligence were proved, as it was the finding of the court, on a balance of probabilities, that *the Appellant was* ***not*** *afflicted with* ***cancer as at July 2011****, such negligence could* ***not*** *have* ***caused*** *the* ***delay*** *in diagnosis*.

8 With this briefest of overviews, we turn now to consider the background facts in detail as these are crucial to the findings made by the Judge in the court below.

Facts

9 The Appellant began to visit CGH for various medical conditions from 2007 but was only clinically diagnosed with lung cancer in 2012. Three of these visits form the subject-matter of her claim in medical negligence and we set them out in a chronological fashion below.

31 October 2007 – the first visit to the A&E department

10 The Appellant first visited CGH's A&E department on 31 October 2007 and was attended to by Dr Yeo Cheng Hsun Jonathan ("Dr Yeo"). She

complained of lower chest pain and shortness of breath. The records reflected Dr Yeo's note that the Appellant was a non-smoker. Dr Yeo ordered a chest X-ray ("the October 2007 X-ray") and reviewed it with Dr Steven Lim Hoon Chin. The doctors noted an opacity in the right mid-zone of the Appellant's chest.

11 Dr Yeo diagnosed the Appellant with a possible case of gastritis and prescribed medication accordingly. He then referred her to CGH's Respiratory Medicine SOC for good measure to review the opacity, even though the incidental finding of the opacity was unrelated to the symptoms that the Appellant presented with at the A&E department.

November 2007 visit to the specialist clinic

12 The Appellant visited CGH SOC two weeks later on 15 November 2007 and was attended to by Dr Imran, who is, as aforementioned, a respiratory physician and the Second Respondent.

13 At the consultation, Dr Imran reviewed the notes taken by Dr Yeo. Dr Imran noted that:

(a) the Appellant had visited the A&E department for centralised chest discomfort, nausea and mild breathlessness;

(b) upon examination, the Appellant had mild epigastric discomfort and her left lower anterior ribs were mildly tender on palpation, but her heart and lung sounds were normal; and

(c) the Appellant was a non-smoker.

14 Dr Imran conducted a physical examination and noted that the Appellant did not complain of respiratory symptoms such as cough or blood in her sputum and did not report any appetite or weight loss. She also did not present with symptoms of infection such as fever or cough. As the October 2007 X-ray contained "an artifact or an opacity in the right mid zone", Dr Imran ordered a repeat chest X-ray in two views – an erect posterior anterior view ("the erect view") and a right lateral view.

15 The two chest X-rays ("the November 2007 X-rays") were reviewed by Dr Imran in wet film format using a light box. At that time, the state of technology was such that Dr Imran was unable to digitally manipulate the November 2007 X-rays for size, contrast or brightness. Dr Imran's assessment was that the opacity noted on the October 2007 X-ray "appeared to be resolving or had resolved on its own". Dr Imran thus gave the Appellant an open date for follow-up and advised the Appellant to return if she felt unwell.

29 April 2010 – the second visit to the A&E department

16 The Appellant went to the A&E department again on 29 April 2010. This time, she complained of right lower chest pain which started an hour before the consultation. The Appellant said that the pain worsened with deep inhalation which caused shortness of breath. When asked, she denied having respiratory symptoms such as cough, running nose and sore throat.

17 Dr Yap, who was then a locum medical officer at the A&E department, attended to her.

18 Dr Yap ordered an electrocardiogram ("ECG") and the April 2010 X-ray. The ECG tracings showed a normal sinus rhythm and ruled out any heart-

related problems. The April 2010 X-ray showed an opacity over the right mid-zone of the Appellant's lungs. Upon noticing this opacity, Dr Yap checked the Appellant's medical records and retrieved the October 2007 X-ray and the November 2007 X-rays. At that time, no radiological *reports* had yet been made on the 2007 X-rays. Comparing the 2007 X-rays with the April 2010 X-ray, Dr Yap saw that the opacity had been present since 2007 and noted that it appeared to be stable as its size remained more or less the same. He did not take any measurements and came to this conclusion simply by comparing the X-rays using the naked eye. Dr Yap also observed that the opacity was regular, round and did not have the feathering or speckled appearance that were typical of malignant nodules. Dr Yap also ruled out pneumothorax as there were no indications suggesting this (such as a visible visceral pleural edge, *ie*, very thin sharp white line, or a collapsed lung). He also ruled out pneumonia and infective causes (*ie*, infections) as there were "no focal or diffuse opacities, air bronchograms or parapneumonic effusions" on the April 2010 X-ray. Dr Yap also took the view that the presenting symptoms of the Appellant on this visit were not related to the opacity. The opacity was therefore deemed to be an "incidental finding", which is a term used to refer to findings that are not related to the patient's presenting symptoms.

19 Partly given that the pain had only started in the hour prior to the Appellant's examination and because the Appellant had told Dr Yap that she had consulted a respiratory specialist, Dr Imran and was told she was fine, Dr Yap concluded that the opacity was an *incidental finding* (*ie,* unrelated to the patient's presenting symptoms), and came to the assessment that the pain was musculoskeletal in nature and unrelated to the opacity. We note that Dr Yap did not have Dr Imran's notes and relied on the Appellant's account of what Dr Imran had told her. Dr Yap then ran his diagnosis by the senior doctor,

Dr Mohan Tiruchittampalam ("Dr Mohan"), who was on duty to supervise junior doctors like Dr Yap. Dr Mohan agreed with Dr Yap's assessment that the nodule appeared to be stable and that the pain was musculoskeletal in nature. Dr Yap recommended that the Appellant be prescribed painkillers, discharged and told to return if the symptoms persisted or worsened. Dr Yap's own notes also requested that the patient be recalled if necessary after the X-ray report was out. Dr Mohan agreed. Dr Mohan was not called as a witness for the trial.

20 Dr Yap prescribed painkillers for the Appellant and discharged her. She was also advised to return if the symptoms persisted or worsened. Dr Yap then sent the April 2010 X-ray for reporting. The report was issued in due course but it was never received personally by Dr Yap.

31 July 2011 – the third visit to the A&E department

21 The Appellant returned to the A&E department more than a year later on 31 July 2011 and was attended to by Dr Soh, who was then a medical officer. The Appellant complained of intermittent *left* lower ribcage pain that had persisted for almost one month. She informed Dr Soh that she had consulted a General Practitioner ("GP") who advised her that her pain was due to inflammation of her ribcage. She had not obtained any referral and attended at the A&E department because the pain persisted. She was 32 years old then.

22 Dr Soh ordered two chest X-rays in the erect and *left* oblique views ("the July 2011 X-rays"). He also ordered an ECG. The ECG tracing came back normal and ruled out cardiac causes for her left rib pain.

23 Dr Soh noted that no rib fractures or other abnormalities showed up on the July 2011 X-rays. Read together with the ECG, Dr Soh concluded that the

July 2011 X-rays ruled out life-threatening conditions such as a cardiac event, pneumothorax or pulmonary embolism. According to Dr Soh, because he was focused on the left chest, which was the region the Appellant complained about, he did not notice the opacity in the right chest which appeared on the erect view of the July 2011 X-rays (the opacity cannot be seen in the left oblique view).

24 Dr Soh's provisional diagnosis was that the Appellant had costochondritis, which is of musculoskeletal origin. He discussed his assessment with his supervising consultant, Dr Lim Ghee Hian ("Dr Lim"). Dr Lim agreed with Dr Soh's views and Dr Soh discharged the Appellant with analgesics. Like Dr Yap, Dr Soh gave the Appellant the typical advice that she should monitor her symptoms and consult a GP or return to the A&E department should her symptoms worsen or persist.

25 The July 2011 X-rays were sent for reporting and the report was prepared the next day, on 1 August 2011. Dr Soh did not receive the report and was unaware that the radiologist had detected the opacity in the right mid-zone of the Appellant's lung, noted that it was stable and had been there since April 2010, and recommended a follow-up of the opacity.

26 The three visits described above form the subject matter of the Appellant's claim in medical negligence. She was subsequently diagnosed with lung cancer. We set out below the events that led to the diagnosis.

November and December 2011 consultations at Raffles Medical Clinic

27 About four months after she saw Dr Soh, the Appellant attended at Raffles Medical Clinic and was seen by Dr Melvyn Wong ("Dr Wong") on 28 November 2011. She complained of cough, breathlessness and blood in the

sputum. Dr Wong explained that he suspected that the Appellant was suffering from upper respiratory tract infection and prescribed some cough medicine. He told the Appellant to return for a chest X-ray if the bleeding in the sputum did not go away.

28 The Appellant returned three days later, on 1 December 2011, and said that she was still coughing and had blood in the sputum. Dr Wong ordered a chest X-ray to be taken ("the December 2011 X-ray") and noticed that there was a lesion in the right mid-zone of the lung. Dr Wong informed the Appellant that the X-ray would be sent for reporting before determining the next steps. The radiological report, which was prepared by consultant radiologist Dr Yeong Kuan Yuen, confirmed the presence of a round patch and ill-defined shadows at the mid-zone of the right lung and suggested that "this is likely to be the result of infection".

29 The Appellant returned on 7 December 2011 to discuss the findings of the report. According to Dr Wong, the Appellant told him that a shadow had been pointed out to her during a previous visit to the A&E department in July 2011. Dr Wong decided to refer the Appellant to a respiratory physician at CGH SOC for further evaluation.

15 December 2011 referral to specialist clinic

30 The Appellant was seen by a respiratory physician, Adjunct Assistant Professor Sridhar Venkateswaran ("Prof Sridhar") at CGH SOC pursuant to Dr Wong's referral in relation to a right mid-zone lesion. In his consultation notes, Prof Sridhar recorded that "the serial lesion seen in 2007, 2010 and July [2011] appeared stable in size". He also noted the symptoms that the Appellant had presented with during the consultations with Dr Wong and recorded that the

Appellant was still coughing and with blood in sputum. The Appellant was also identified to be a smoker for the first time.

31 Prof Sridhar ordered chest X-rays and a Computed Tomography ("CT") scan of the Appellant's chest, and gave the Appellant a further appointment to follow-up on the lesion.

32 The CT scan was conducted by consultant radiologist, Dr Elizabeth Chan ("Dr Chan"). In her report, Dr Chan noted that the CT scan revealed a nodule that appeared to be a pulmonary hamartoma (*ie*, benign lesion). Nonetheless, Dr Chan recommended that a biopsy be conducted to establish a "baseline histological correlation" because of the nodule's interval increase in size, lobulated margins, pleural tagging and the Appellant's smoking history. The report concluded with the tag "Abnormal – Further action or early intervention required". Dr Chan also explained that she had looked at and compared the previous X-rays to determine the growth of the nodule over time.

Diagnosis and treatment of lung cancer

33 A biopsy of the nodule was conducted by Dr Andrew Tan on 16 February 2012. The biopsy confirmed that the nodule was malignant and that the Appellant had lung cancer which originated from the lung.

34 The Appellant saw Prof Sridhar again on 1 March 2012. Prof Sridhar explained the results of the biopsy to the Appellant and informed her that there was a good chance she could have a complete cure with a lobectomy. She was clinically staged as having Stage I lung cancer. Prof Sridhar referred the Appellant to surgical oncologist Adjunct Associate Professor Koong Heng

Nung ("Prof Koong"), who advised the Appellant to undergo a lobectomy to remove the part of her lung which had the tumour.

35 The Appellant underwent a lobectomy in March 2012 and one-third of her right lung was removed. The tumour measured 3.0 cm and was diagnosed as Stage IIA non-small cell lung cancer. We pause to note that the exact mutation type of the cancer was not identified until much later, in 2014. Prof Koong and Dr Daniel Tan Shao Weng from the National Cancer Centre Singapore ("Dr Daniel Tan") followed up with medical care and treatment for the Appellant. She underwent chemotherapy for about four months. She also underwent CT scans every four months.

The relapse

36 The Appellant suffered a relapse in August 2014, when a CT scan revealed a new mass-like density in the right middle lobe. A biopsy confirmed that the lung cancer had progressed to Stage IV. In December 2014, Dr Daniel Tan carried out an analysis on the tumour that was resected in 2012 to determine its mutation type. Dr Daniel Tan explained that he was unable to run the necessary tests on the tumour that was present in 2014 because the size of the sample that was extracted in 2014 was too small. He therefore ran a *retrospective* analysis on the tumour that was removed via lobectomy in March 2012. The resected tumour from 2012 was found to be positive for a rare echinoderm microtubule-associated protein-like 4 ("EML4")-ALK gene rearrangement. In other words, the Appellant was retrospectively diagnosed only in 2014 to have been suffering from ALK-positive lung cancer in 2012. According to the Respondents' expert witness, Professor Goh Boon Cher ("Prof Goh"), ALK-positive lung cancer is caused by a rare mutation whereby there is a translocation (relocation or re-arrangement) of a part of a

chromosome, which brings together two genes which are usually not together. This results in the expression of a signalling receptor called the ALK. Significantly, Prof Goh stated that it is not known what induces this genetic event or transformation. When the ALK gene is activated, two receptors called the tyrosine kinase will bind to each other and can stimulate cell proliferation (*ie*, cause an increase in the number of cells). When the ALK gene is expressed on the cell membrane and activated, it is oncogenic (has the potential to cause cancer) and can transform what were initially benign cells into malignant or cancerous cells. Additionally, Prof Goh explained that the ALK gene is usually silenced in a normal human tissue. What this means is that the ALK gene is not expressed *except* under malignant conditions.

37 In July 2015, the Appellant started on a second-generation ALK-inhibitor, Ceritinib and Nivolumab as part of a clinical trial. She remained on that until October 2016, when the cancer progressed to her brain and mediastinal lymph node. She was then taken off the clinical trial and managed with radio surgery, chemotherapy and Ceritinib. Since March 2017, the Appellant has been treated with a third-generation ALK-inhibitor, Lorlatinib.

The arguments in the court below

38 The Appellant commenced the action for medical negligence against the Respondents in January 2015. Her central complaint appears to be that the Respondents' negligence caused a delay in the diagnosis and treatment of her lung cancer. As a result, the Appellant claimed that she went untreated and the malignancy grew untreated and progressed from Stage 0 to I to Stage IIA before it was detected. According to the Appellant, had the opacity been investigated and assessed sooner, her medical outcome would have been different.

39 The Appellant also pleaded that there was a contract between herself and the Respondents but this was not pursued below nor on appeal.

40 The Respondents denied liability and contended that:

(a) there was no breach and they had met the standard of care expected of them;

(b) even if there was any breach, there was no causation because:

(i) the Appellant did not have lung cancer/ the nodule was benign between October 2007 and July 2011; and

(ii) in any case, the Appellant received treatment for her ALK-positive lung cancer at the earliest available time because the drugs approved for the treatment of ALK-positive cancer were only available for Singapore clinical trials in 2013 and 2014, and even then only for patients suffering late stage/ Stage IV cancer.

The decision below

41 The Judge dismissed the Appellant's claim.

42 As alluded to at the beginning of this judgment, the Judge's decision turned chiefly on the issue of causation. The Judge found that causation had not been made out primarily because the Appellant had not shown, on a balance of probabilities, that she had cancer by July 2011. It was held that there was no evidence to indicate the occurrence of the gene fusion that would cause the nodule to become malignant between October 2007 and July 2011. On the other hand, the Judge accepted the Respondents' account that the Appellant's nodule was initially benign and only turned malignant sometime *after* July 2011. In

coming to this finding, the Judge considered the following: (i) the slow rate of growth of the nodule between October 2007 and July 2011 which would be consistent with its benignity; (ii) the Appellant had ALK-positive lung cancer which is generally aggressive and it was in fact aggressive after 2012; (iii) the long doubling time of the nodule which indicated that it was stable and benign at the material time; (iv) there were no notable features of the nodule indicating malignancy between October 2007 and July 2011; (v) when the Appellant was diagnosed with lung cancer in February 2012, she was *clinically* staged at Stage I, which is a very early stage of the cancer. The Judge therefore accepted the Respondents' case that the nodule was initially benign in nature and became malignant only *after* July 2011. The Judge rejected the Appellant's contention that she had a different form of lung cancer before the gene fusion occurred given the lack of evidence proving this.

43 Relatedly, the Judge also found that the Appellant was diagnosed at the earliest possible stage of her cancer, received the full treatment available to her at the earliest time and did not undergo any treatment that could have been avoided. This was because the Appellant had been clinically staged at Stage I, which was the earliest possible clinical staging given that a Stage 0 cancer would not have been detected on an X-ray. The Judge also accepted that the lobectomy and adjuvant chemotherapy that the Appellant underwent would have been necessary in any case. The Judge took into account the industry knowledge with regard to the ALK fusion gene, namely that testing for the gene only became established in 2014. It was also relevant that treatment for ALK-positive lung cancer was only available for Singapore clinical trials in 2013 or 2014 and even then only for Stage IV cancer. Consequently, the Appellant had received treatment at the earliest available time.

44 The claim would have failed in any case given that causation and loss were not proven. But the Judge went *further* to determine if the Respondents were in breach of their duty of care. It was first determined that the Appellant's claims fell within the realm of diagnosis and treatment, as opposed to advice, because the Appellant was in a position of passivity throughout. The Judge therefore applied the test derived from the authorities of *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582 ("*Bolam*") and *Bolitho v City and Hackney Health Authority* [1998] AC 232 ("*Bolitho*") (collectively "the *Bolam-Bolitho* test") to the actions of each of the Respondents to determine if the requisite standard of care had been met.

45 The Judge found that CGH and Dr Imran were in breach of their respective duties of care but that Dr Yap and Dr Soh were not.

46 As just mentioned, Dr Yap and Dr Soh, the two A&E doctors, were found *not* to be in breach of their respective duties of care. The distinction between an A&E doctor's responsibility for an incidental finding and that for a patient's presenting complaint appears to have weighed heavily on the Judge's mind. The Judge accepted that from the perspective of the two A&E doctors, the opacity was an incidental finding which was unrelated to the Appellant's presenting symptoms. Thus, it was reasonable for Dr Yap not to have followed up on it, especially since he had determined that it was stable. It was also reasonable for Dr Soh to have missed it given that he was focused on the Appellant's presenting complaint which related to the *left* side of her chest. The Judge also considered that both Dr Yap and Dr Soh had consulted their respective senior consultants, both of whom agreed with their diagnosis and treatment plans. In relation to Dr Yap, the Judge also found it reasonable for him not to have run further investigations or to refer the Appellant to a specialist

since there was no clinical basis to do so. He was also entitled to rely on CGH's processes in relation to the radiology reporting, which was meant to flag significant abnormalities, before determining if further action was necessary.

47 With regard to Dr Imran, the Judge found that it was not a breach of his duty of care for Dr Imran to have missed the opacity or seen so little of it. She relied on the evidence of two radiologists, Dr Lynette Teo ("Dr Teo") and Dr Daniel Tan, both of whom agreed that it was difficult to see the opacity given its location. The Judge also accepted that it may have been more challenging to see the opacity in November 2007 without the benefit of a digital system or radiological report. Second, the Judge held that Dr Imran's diagnosis that the opacity was due to an infection or inflammation was reasonable given the Appellant's age and lack of symptoms to suggest otherwise. Third, Dr Imran's decision not to follow-up the investigations with a CT scan was also found to be reasonable given the Appellant's presenting symptoms and the risks associated with a CT scan. However, the Judge found that Dr Imran's failure to schedule a follow-up with the Appellant to ensure that the opacity was completely resolved constituted a breach of his duty of care. Given the circumstances, the Judge found that it was not sufficient for him to have given the Appellant an open date to return.

48 As for CGH, the Judge rejected the Appellant's contention that it was unreasonable for CGH not to implement routine reporting for X-rays until 2010. The Judge also rejected the suggestion that CGH was under a duty to ensure that radiological reports are always routed back to the specific doctor who had ordered the report. But, the Judge found that CGH was in breach for failing to send the April 2010 and July 2011 X-ray reports to the Appellant following her consultations with Dr Yap and Dr Soh respectively, or for otherwise failing to

communicate the findings of the X-ray reports to the Appellant. The Judge added that this was so despite the fact that the reviewing doctor had assessed that there was no need for further follow-up. The reason for this was that the results of such tests and the clinical decision made by the doctors should always be made known to the Appellant so as to enable her to be informed of her condition and be able to make the decision as to whether to return to CGH for consultation, to seek a second opinion elsewhere or to do nothing further.

The appeal

49 We outline briefly the parties' positions on appeal and will discuss in greater detail the relevant submissions when we discuss the liability of each of the Respondents below.

Standard of care and breach

50 The Appellant maintained that the Respondents were in breach of their duties of care. First and foremost, counsel for the Appellant, Mr Vijay Kumar Rai ("Mr Rai") suggested that although the *Bolam-Bolitho* test applies to the realm of diagnosis, treatment and care, a *different* test should apply when it comes to a "pure diagnosis" that is based purely on the facts. The Appellant relied on two English cases in this regard. Counsel for CGH, Ms Kuah Boon Theng SC ("Ms Kuah") and counsel for the Respondent-doctors, Ms Vanessa Lim ("Ms Lim"), maintained that there was no reason why the *Bolam-Bolitho* test should not apply in the present case and submitted that the English decisions were in fact decided within the *Bolam-Bolitho* framework. The Respondents also took the view that the present case was, in any case, not a "pure diagnosis" case.

51 In relation to *Dr Yap and Dr Soh*, the Appellant argued that given the limitations of the A&E department, they ought to have referred the Appellant to a respiratory specialist for follow-up assessment of the opacity instead of attempting to assess it themselves under time pressure. The Appellant also contended that it was unreasonable for Dr Yap to have asserted the stability of the nodule based solely on the X-rays because it was a "time-honoured" tradition that the nodule should have been followed up with serial CT scans for two years. The Respondents, on the other hand, maintained that there was no such tradition and that the articles relied on by the Appellant concerned trials conducted under very different conditions and medical settings. They were therefore neither useful nor relevant. The Respondents contended that there was no medical indication which necessitated a CT scan or immediate referral to a respiratory physician when Dr Yap and Dr Soh saw the Appellant in the A&E department given her lack of symptoms and the doctors' entitlement to rely on the X-ray reporting system, which acted as a safety net.

52 In relation to *Dr Imran*, the Appellant contended that Dr Imran's conclusion that the opacity was resolving or had resolved was internally inconsistent and erroneous, and consequently, a breach of his duty of care. Further, the Appellant's position was that Dr Imran ought to have deferred making the diagnosis until he was in a better position to assess further with the radiological report, given the poor visibility on the radiographs and the doubts that he harboured. According to the Appellant, Dr Imran also breached his duty of care by not following up on the nodule for two years, for failing to send the X-ray for reporting and/or failing to order further X-rays. Both Ms Kuah and Ms Lim submitted that there was sufficient clinical information to enable Dr Imran to make the considered diagnosis that the opacity was caused by a garden-variety infection and that there was a low risk of malignancy. There was

therefore no medical indication which necessitated further investigation and it was reasonable for Dr Imran to have discharged the Appellant with an open date.

53 In relation to *CGH*, the Appellant alleged that the hospital breached its duty of care by failing to ensure that the A&E team reviewing the radiological reports heeded the recommendations contained therein and carried out the necessary follow-up, such as to refer the Appellant to a specialist. Additionally, Mr Rai submitted that CGH would also be vicariously liable for the negligence of Dr Imran, Dr Yap, Dr Soh and/or the "rest of the A&E team". For the *first* time on appeal, the Appellant also suggested that CGH, Dr Yap and Dr Soh had breached their duty of care *as joint tortfeasors*. In response, Ms Kuah pointed out that the burden of proof was on the Appellant to show that the A&E team failed to recall her for further assessment by a respiratory physician. Ms Kuah submitted that the Appellant's allegation that the reviewing A&E doctors had ignored the recommendations of the radiologists was a bare one.

Causation and loss

54 Mr Rai argued that the Judge should not have applied the "but for" test to determine causation but should have applied the test of "material contribution to damage" or "material increase in risk". Ms Kuah submitted that the "but for" test is the correct test but suggested that causation would not have been made out on *any* test because the Appellant failed to prove that the nodule was malignant when she was attended to by the Respondent-doctors.

55 Mr Rai submitted that the Judge's finding on causation was based on conjecture since it was impossible to prove that the nodule was benign before July 2011. Ms Kuah submitted that the Judge's finding that the nodule was not

malignant at the material time was supported by expert evidence and well-reasoned, and therefore could not be said to be a conjecture. Ms Lim aligned her submissions with Ms Kuah and highlighted the slow rate of growth of the nodule between October 2007 and July 2011, the absence of malignant features in the opacity in the same period and the clinical staging of the lung cancer at Stage I in February 2012.

56 The Appellant repeated that the Respondents' negligence prevented an earlier diagnosis of the Appellant's cancer which caused the cancer to advance to Stage IIA and spread. The delay in diagnosis was said, *inter alia*, to have reduced the likelihood of cure, reduced the Appellant's chances of surviving beyond the five-year point and increased the likelihood of a relapse. However, Ms Kuah submitted that there was no basis for any of these contentions by the Appellant. It was argued, first, that it has not been proven on a balance of probabilities that the delay in diagnosis caused the progression of the Appellant's cancer. Second, Ms Kuah submitted that there was no evidence that a smaller nodule in an earlier stage of cancer progression would have resulted in a higher likelihood of cure, a lower likelihood of nodal metastasis or a lower risk of relapse. Lastly, Ms Kuah maintained that the treatment which would have been performed had the cancer been detected earlier was the same as that which the Appellant had received. Ms Lim also added that the treatments for the specific ALK-positive lung cancer which the Appellant suffers from were only made available in 2013 and 2014 and only for patients with Stage IV lung cancer. The Appellant was thus not deprived of any treatment at the material time and suffered no loss or damage.

57 Finally, Ms Lim submitted that the Appellant's claim for loss of chance to cure her cancer was not permitted under the law and, in any case, the

Appellant had not proven on a balance of probabilities that she had indeed lost her chance of a cure.

The issues on appeal

58 The issues before us are as follows:

(a) first, what the requisite standard of care in relation to "pure diagnosis" cases should be;

(b) second, whether the Respondents were in breach of their respective duties of care owed to the Appellant; and

(c) third, if any of the Respondents was in breach of his duty of care, whether that breach caused any loss and damage to the Appellant.

Our decision

The test for "pure diagnosis" cases

59 Mr Rai urged us to apply a test other than that of *Bolam-Bolitho* in the present case to determine if there had been a breach by the Respondents. According to Mr Rai, the application of the *Bolam-Bolitho* test has been questioned in cases where the diagnosis of the doctor was based "purely on the facts". He relied on the English Court of Appeal decision in *Penney v East Kent Health Authority* [2000] PNLR 323 ("*Penney*") and the more recent English High Court decision on the same issue in *Muller v King's College Hospital NHS Foundation Trust* [2017] 2 WLR 1595 ("*Muller*").

60 The claimants in *Penney* underwent cervical smear tests in order to screen for existing or potential cervical cancer. The smears were examined by

screeners employed by the defendant health authority. The screeners were required to diagnose the smears on a scale from "negative" (which meant no indication of cancerous cells) to "glandular neoplasia" (which meant that there were severe cell changes showing possible carcinoma or cancer). The screeners erroneously determined that the smears were negative when the cells were in fact potentially cancerous. The claimants later developed adenocarcinoma of the cervix and sued the health authority in medical negligence. There were three issues before the English Court of Appeal, namely, what was apparent from the smear slides, whether a screener exercising reasonable care would be at fault in not seeing it and whether a reasonably competent screener would have treated the slide as showing a negative result. The first question was treated as one purely of fact both in the High Court and in the Court of Appeal. This, it was held, was a question that the court had to decide without applying the *Bolam* test. In the High Court, the judge took the view that the latter questions were also not subject to the *Bolam* test because it was clear that the screener had gotten the answer wrong and the only question was whether the error fell below the standard of care applicable. This was said to be a matter for the courts to decide without recourse to the *Bolam* test. However, in case he was wrong, the trial judge in the High Court also found that the defendant's experts' evidence could be rejected using the *Bolitho* exception. In the Court of Appeal, Lord Woolf MR distinguished the latter two questions as questions of professional practice or opinion that involved not just questions of fact but also of *opinion* as to what the screeners ought to have done based on what the court found to be visible. Nonetheless, Lord Woolf MR ultimately held that the judge's decision should be upheld on the ground that he had correctly applied the *Bolitho* exception.

61 In *Muller*, a consultant histopathologist (someone who studies the manifestations of diseases through microscopic examination of tissue) failed to diagnose a malignant melanoma from a biopsied sample taken from the claimant. The melanoma was subsequently diagnosed and surgically excised but it had spread by then. An expert for the defendant hospital trust testified at trial that the misdiagnosis was not negligent but could have easily been made by a histopathologist acting with reasonable competence. The hospital trust submitted that the correct approach was that set out in *Bolam*, and that it would be sufficient for the hospital trust to show that the histopathologist had acted in accordance with a practice of competent respected professional opinion that is accepted as proper by histopathologists skilled in the art of reporting on biopsies. The claimant submitted that the correct approach was for the court to determine the objective facts of what the biopsy showed and then to decide for itself whether the misdiagnosis was one which a histopathologist acting with reasonable skill and care could have made.

62 Kerr J, in delivering the judgment, acknowledged that there was some confusion as to whether the *Bolam* test would apply to a "pure diagnosis" case where what is alleged to be negligent is the doctor's diagnostic decision itself, with no decision made about treatment or further diagnostic procedures. In such cases, the diagnosis would either be right or wrong and if wrong, either negligently so or not. There was no weighing of risks against benefits and no decision to treat or not to treat (see *Muller* at [62]). Kerr J opined (at [51]) that such cases were surely not contemplated by McNair J when he set out the test in *Bolam*, which had no element of wrongful diagnosis and was a pure "treatment" case. Kerr J himself took the view that in "pure diagnosis" cases, the experts expressing opposing views on the issue cannot both be right and the issue is a matter for the decision of the court which should not be delegated to

the experts (at [75]). However, he understood himself to be bound by the law as established by the English Court of Appeal in *Penney*. Although Kerr J interpreted *Penney* as permitting the court to choose between competing expert opinions on the issue, he concluded that the court was ultimately bound to do this within the boundaries of the *Bolitho* exception (at [79]). Kerr J went on to find that the hospital trust's expert's reasoning and conclusion were not defensible and had to be rejected under the *Bolitho* exception (at [97]).

63 In our view, neither *Penney* nor *Muller* suggests that the *Bolam-Bolitho* test would not apply in "pure diagnosis" cases. We do not understand Lord Woolf MR to be setting out a different approach for "pure diagnosis" cases. Instead, Lord Woolf MR was simply stating that questions of *pure fact* can and should be answered by the court without recourse to the *Bolam-Bolitho* test. But questions which entail interpretation or reviewing of medical opinion, remain subject to the *Bolam-Bolitho* standards. In other words, a *pure* finding of fact (such as what could be observed) is a *precursor* inquiry that the court could undertake without recourse to the *Bolam* test. However, any subsequent diagnosis that incorporates interpretation and opinion must be measured against a reasonable standard of care as understood by the medical professionals, and hence the *Bolam-Bolitho* test must apply.

64 In our view, the above approach is correct and continues to be that which we adopt in medical negligence cases; even though questions of *pure fact* such as whether something was detected or not can be answered without recourse to the *Bolam-Bolitho* test, when we confront the question of what the doctor should or ought to have done, the *Bolam-Bolitho* test must necessarily apply.

65 In the present case, the issue of what the Respondents ought to have done is intensely contextual and requires a review of the Respondents' decisions against established standards within the medical industry. We cannot avoid, at this stage of the inquiry, the consideration of the perspectives of other reasonable doctors and what they would have done given the circumstances and the information available. This is precisely what the *Bolam-Bolitho* test is designed to allow. As we explained in *Hii Chii Kok v Ooi Peng Jin London Lucien and another* [2017] 2 SLR 492, the *Bolam-Bolitho* test gives due recognition to the persisting realities that medical science would always be in a state of discovery and learning, and innovation should not be discouraged (at [100]). Importantly, judges are not in the best position to resolve questions of *genuine medical controversy* that confront the medical industry and should not be preferring one body of medical opinion over another unless it has been shown to be logically indefensible.

66 We therefore cannot accept Mr Rai's submission that the *Bolam-Bolitho* test should not apply in the present case and will therefore apply the said test to determine if there had been a breach of the duty of care owed by each of the Respondents.

The standard of care expected of A&E doctors

67 We begin by addressing the liability of the two A&E doctors, Dr Yap and Dr Soh. However, before we turn to consider if they are liable in medical negligence, we think it useful to first proffer some comments on the responsibility of A&E doctors in general.

68 The standard of care expected of doctors who work in the A&E department must be informed by the reality of the working conditions in the

department and calibrated accordingly. The A&E department sees a high volume of patients, many of whom would have major trauma or life-threatening conditions requiring urgent treatment. The doctors who testified at the trial below estimated that that each A&E doctor in CGH attends to 30 to 35 patients during each shift lasting eight hours. Doctors on duty in the A&E department do not have the luxury of long and mature consideration of each case. Instead, they must make decisions at short notice in a highly pressurised environment. In numerical terms, an A&E doctor in CGH is generally expected to spend only about 15 minutes on each patient (excluding acute medical emergencies which would certainly not be subject to such time constraints). Consequently, it would be unreasonable to expect A&E doctors to review cases in as much breadth, depth or specificity as a GP or specialist in an outpatient clinic.

69 Given the intense time constraints, the evidence adduced below (which we find no reason to disagree with) is that an A&E doctor must *necessarily* adopt a "targeted approach". What this means is that an A&E doctor can reasonably prioritise the diagnosis and treatment of the patient's presenting symptoms and the elimination of life-threatening conditions. On the flipside, *less* attention would be given to *incidental findings*. That is not to say that incidental findings which are detected can or ought to be ignored. The requisite standard of care in relation to incidental findings would depend among other things, on the characteristics of the incidental finding, whether it has been picked up before, and the clinical history of the patient. An A&E doctor may be required to do no more than to refer the patient to the appropriate department for follow-up in relation to an incidental finding.

70 The evidence also revealed that the A&E doctors work in shifts and rotations. What this means is that patient care and management is undertaken as

a team. It is thus not guaranteed, and is, in fact, more often than not the case that the A&E doctor who receives the patient will not follow through and the patient is left to rely on the *system* and the *department* as a whole instead of on any particular doctor.

71 We discuss in greater detail the content of such a duty against the facts of the present case below and in relation to Dr Yap and Dr Soh, respectively. It bears emphasising that whether an A&E doctor has discharged his duty of care would ultimately depend on the precise facts as well as circumstances of each case and patient.

Dr Yap

72 We affirm the Judge's finding that Dr Yap did *not* fall below the requisite standard of care and agree with all the reasons given in her decision below.

73 Our decision turns on two key considerations: first, that the opacity was an incidental finding because it was unrelated to the Appellant's presenting symptoms; second, an A&E doctor is entitled to adopt a targeted approach which focuses on treating the presenting symptoms.

74 It was undisputed that the opacity was an incidental finding. As we have discussed above, doctors in the A&E department work under conditions that are starkly different from that of a specialist or GP. As the Judge found, A&E doctors are entitled, and in fact, expected to adopt a targeted approach and make speedy decisions. For this reason, it was reasonable for Dr Yap to have been primarily concerned with diagnosing and treating the Appellant for her chest

pains rather than to investigate the opacity which did not seem to be affecting the Appellant.

75 This is not to say that incidental findings can be completely ignored. In our view, every doctor, including an A&E doctor, owes a duty to apply his mind to every finding that is picked up, even incidental ones. But it is a separate question as to whether or not diagnosis and treatment can be *deferred*. We imagine that in the majority of cases, where the patient is asymptomatic in relation to the incidental finding, there may be no urgency in diagnosis and treatment and that this may be deferred to after certain reports, such as a radiological report, are made available, or by advising the patient to follow-up with a visit to her own GP. In the former case, one duty of the A&E doctor would be to order that the necessary tests be conducted. This need not take place on the day of the A&E consultation itself; the standard of care would simply require the A&E doctor to make arrangements for those to take place. It would then be the responsibility of the hospital to ensure that there is a proper system in place in order to ensure that these tests are conducted and their results properly followed-up on. However, where an incidental finding needs to be treated with some degree of urgency, an A&E doctor cannot simply ignore it in order to treat the patient's presenting symptoms. To do so would undoubtedly fall below the standard of care required.

76 In the present case, Dr Yap did not ignore the presence of the opacity. He retrieved the November 2007 X-rays, compared them with the April 2010 X-ray and made two determinations. The first was that the opacity had persisted over a period of at least two years but that it was stable because there was no visible growth in size. The other was that it was not related to the Appellant's presenting symptoms. Given these assessments, Dr Yap ordered that the April

2010 X-ray be reported on and specifically requested, in his clinical notes, that the Appellant be called back if necessary. This was sufficient to discharge his duty as an A&E doctor in relation to the incidental finding of an opacity. There were no indications for an urgent need to diagnose or treat the opacity; the Appellant had no related symptoms and the opacity appeared to be stable. Significantly, Dr Yap did not discharge the Appellant without more. He had *specifically* instructed that the Appellant be *called back* after the radiological report was out, if necessary. This was sufficient to discharge his duty of care owed to the Appellant in relation to diagnosing and treating the opacity. As an A&E doctor, Dr Yap need not have personally attended to the opacity, which was an incidental finding, at the A&E department that night. His decision to defer any such diagnosis and treatment was wholly reasonable.

77 The Appellant argued that Dr Yap ought to have sent the Appellant for a CT scan because the X-rays were an imprecise tool for the identification and diagnosis of lung cancer. There appears to be some support for this in two articles. The first is titled "Miss Rate of Lung Cancer on the Chest Radiograph in Clinical Practice" (Lorentz Quekel *et al*, "Miss Rate of Lung Cancer on the Chest Radiograph in Clinical Practice", *Chest* (March 1999) at 720–724), and the second is "Pitfalls in the Radiologic Diagnosis of Lung Cancer" (John H Woodring, "Pitfalls in the Radiologic Diagnosis of Lung Cancer", *American Journal of Roentgenology* (June 1990) at 1165–1175). Both articles addressed the limitations in the use of chest X-rays to detect lung cancer in its early stages. We accept that there may be some inadequacies in the use of X-rays to detect lung cancer. But it appears to us that it would not be unreasonable to use chest X-rays as the first or initial diagnostic tool given their relative availability in the A&E department. We found the evidence of Associate Professor Malcom Mahadevan ("Prof Mahadevan") to be useful in this regard.

Acknowledging the limitations of X-rays as highlighted in the two aforementioned articles, Prof Mahadevan nonetheless explained that the primary tool that is available in the A&E department remained the X-ray machine because CT scans are "usually limited to urgent or emergent cases only". We thus find that given the working conditions in the A&E department, there was no duty on Dr Yap to have ordered a CT scan *in the first instance* in relation to an *incidental finding* of a *known nodule* that appeared to be *stable*.

78 We therefore affirm the Judge's decision that Dr Yap was *not* in breach of his duty of care owed to the Appellant.

79 We have one additional observation. The Judge accepted (at [92]) that since Dr Yap was aware that the nodule was a known finding and the Appellant had been seen by a respiratory specialist (Dr Imran) in 2007, it was reasonable for Dr Yap to conclude that an assessment had been made and that the Appellant had been discharged from respiratory follow-up because her condition was not serious, which was confirmed by the Appellant informing that Dr Imran had told her that she was fine. We caution that just because *a specialist* had attended to a patient is not, in and of itself, *prima facie* evidence that no further follow-up is necessary. This is especially so if there had been a long passage of time since the last specialist consultation. A patient's account that the specialist had told her "she was fine" would also not be sufficient reason, in and of itself, not to investigate further.

Dr Soh

80 There was a conflict of evidence at trial as to whether Dr Soh did notice the opacity on the chest X-rays, but the Judge resolved this conflict in his favour, holding that he had not seen the opacity because he had been focusing on the

left side of the Appellant's chest where the pain was said to be emanating from. The Judge went on to find that Dr Soh was not in breach of his duty of care primarily because he was entitled, as an A&E doctor, to adopt a targeted approach and focus on investigating into the Appellant's presenting symptoms: see the Judgment at [107].

81 We affirm the Judge's finding that Dr Soh was *not* in breach of his duty of care for the same reasons given by the Judge. We accept that Dr Soh did not detect the opacity. We see no reason to disagree with the Judge's finding on this point and the Appellant has not disputed it on appeal either. Dr Lim, the senior consultant who had supervised Dr Soh, also gave evidence that they were focused on the left side of the chest at the material time.

82 We agree that it was *not* a breach of his duty for Dr Soh to have missed the opacity altogether. As we have mentioned, an A&E doctor is not expected to conduct a general health screening. His priority would be to resolve the patient's presenting complaints. We do *not* think that it was unreasonable for Dr Soh to have missed the opacity in the given circumstances which required him to focus on another area of the chest X-ray altogether in order to properly address the Appellant's presenting symptoms. This was corroborated by Dr Soh's ordering of the second X-ray in the left oblique view and his clinical notes, and Dr Lim's testimony that they were focused on eliminating the possibility of pneumothorax as well as the collection of fluids in the *left* side of the lungs. Dr Soh's adoption of a targeted approach was *not* unreasonable and he was not in breach of his duty of care for doing so.

Dr Imran

83 Mr Rai submitted that it was unreasonable for Dr Imran to have discharged the Appellant with an open date when he was unsure if the opacity had resolved. Had Dr Imran been sure, he would not have stated that "the nodule appeared to be resolving or had resolved on its own" but would have determinatively chosen between the two possibilities. In particular, Mr Rai suggested that Dr Imran owed a duty to follow-up with the Appellant until the opacity had resolved completely or to defer any final diagnosis until he was in a better position to make it with the assistance of a radiological report. Mr Rai also submitted, generally, that X-rays are limited in the assessment of nodules and a CT scan ought to have been ordered.

84 We agree with the Judge that it *was* a breach of his duty of care for Dr Imran to have discharged the Appellant when he was not certain that the suspected infection had completely resolved (although he is not liable for the reason set out below (at [104])).

85 First, it was clear to us that Dr Imran was (contrary to his evidence) unsure if the opacity had resolved. In his own affidavit of evidence-in-chief, Dr Imran described his assessment as follows: that "the nodule appeared to be resolving or had resolved on its own". This description indicated that he was unable to determinatively state that the opacity had resolved and that there was at least some degree of uncertainty as to whether it was still in the process of resolving. If he was sure that the opacity had resolved, he would not have employed language such as "*appeared* to be resolving" or even that the "opacity *seems* clear". However, we are not saying that it was unreasonable for Dr Imran to have been unsure if the opacity was resolving. In fact, it was understandable given the following factors:

(a) It has not been seriously disputed that the position of the opacity was such that it was partially blocked by the ribs. According to Dr Teo, a radiologist, the October 2007 X-ray showed that the opacity was *partially* covered by the anterior aspect of the right fourth rib and it was covered almost *entirely* by the anterior aspect of the right fourth rib on the erect view of the November 2007 X-ray. Dr Rameysh, a consultant radiologist, also confirmed that the nodule was overlying the rib in the November 2007 X-rays.

(b) Dr Imran had to review the November 2007 X-rays on wet film without the advantage of any technology that would allow him to adjust the brightness of the films or to zoom into a specific area.

(c) Dr Imran did not have the benefit of hindsight and was not operating on the knowledge or the assumption that the opacity was still present, and would not have gone out of his way to look for it as the other doctors did retrospectively. In this regard, Dr Teo cautioned that when reporting retrospectively, radiologists such as herself would expressly look for previous imaging in order to correlate the later findings, and that such hindsight bias must be guarded against.

(d) According to Dr Teo, that the opacity appeared to be smaller or completely hidden could also be due to a different inspiratory effort by the Appellant. In other words, the size of the breath taken by the Appellant during the X-ray scanning process could also affect the size of the opacity as reflected in the X-ray.

86 Given the above, it was reasonable for Dr Imran to have been unsure if the opacity was resolving or if it had already resolved completely. In fact,

Dr Teo herself took the position that she would not have conclusively stated that the opacity had resolved.

87 However, it is precisely because there were numerous factors contributing to the uncertainty of his diagnosis that Dr Imran ought *not* to have discharged the Appellant *without a scheduled follow-up appointment*. As a respiratory specialist, Dr Imran would be subject to a duty of care *quite different from* that of an A&E medical officer in relation to the diagnosis and treatment of an identified lung opacity. One would expect Dr Imran to take care to ensure that the opacity was not of any medical concern. On the evidence, it appears that Dr Imran was well aware of the limitations of reviewing an opacity positioned near or beneath the ribs using wet film X-rays. If there was a possibility that the opacity was still present but merely hidden due to its position, or appeared to be smaller simply because a smaller inspiratory effort was made by the Appellant at the time of the later X-ray, there ought to have been follow-up action. This could have been in the form of repeat X-rays on the same day or by way of a scheduled follow-up appointment. This is especially since as a respiratory specialist, Dr Imran was, in many ways, the "last in line" at the material time to diagnose a lung opacity. Unlike Dr Yeo who could and did refer the Appellant to a specialist, in the absence of a further referral, there would have been no one *else* who would have been in a better position to conduct the necessary follow-up action. Thus, if Dr Imran did not ensure that the opacity had fully resolved, no one else would.

88 The importance of reaching a certain diagnosis before discharge is underscored by the possibility of the opacity being a malignant growth. In addition, as a specialist, Dr Imran's assessment would be relied on by generalist doctors. According to Dr Yap, one reason for his decision not to refer the

Appellant for further investigations was that the opacity was a known finding that had previously been seen by a specialist, namely Dr Imran. That doctors place great weight on the diagnosis and treatment of "known findings" by specialists is something that we also took into account in determining that Dr Imran ought not to have discharged the Appellant when he was uncertain if the opacity had resolved completely. Again, this is because it was unlikely that any follow-up in this regard would be conducted by another doctor. It was wholly within Dr Imran's sphere of responsibility to ensure that the opacity was not of concern.

89 We are also concerned with the stark difference in the necessary follow-up action depending on whether the opacity had resolved. In Dr Imran's own words, if the opacity had been visible on the November 2007 X-rays, it would have been a "persistent opacity" since it was also visible on the October 2007 X-ray. The proper follow-up then would have been to schedule a repeat consultation in six weeks' time even if the patient was asymptomatic. This is consistent with Dr Teo's evidence that an infection typically takes six to eight weeks to resolve. Given the marked difference in follow-up action depending on whether the opacity was present on the November 2007 X-rays, if Dr Imran was unsure if it was indeed present, he ought to have taken the more cautious route of scheduling a follow-up. We do not think that this would have been too onerous an obligation to discharge.

90 Dr Imran relied chiefly on the asymptomatic presentation of the Appellant, her age and non-smoking background in his defence. We would only observe that the asymptomatic presentation of the Appellant is neither here nor there – the evidence adduced in the court below showed that sufferers of early stage lung cancer are largely asymptomatic. None of the other characteristics

would affect our views above, that if a specialist was unsure whether an infection had completely cleared or if an opacity had completely resolved, it would be unreasonable to discharge the patient with no follow-up appointment. This ought to be the case regardless of the patient's age and smoking preferences. It would be *even more* unreasonable if the Appellant had been of old age and/or is a known smoker.

91 For the above reasons, we agree with the Judge that Dr Imran was in breach of his duty of care for failing to schedule a follow-up appointment despite being uncertain that the opacity had completely resolved.

92 For completeness, we add that we are in agreement with the Judge that the standard of care did not require Dr Imran to call for a CT scan. The clinical indications were not so overwhelming as to necessitate a CT scan in November 2007; the Appellant was asymptomatic and the opacity had persisted for only two weeks. More importantly, Dr Imran had in fact thought that it was resolving or had resolved (albeit mistakenly). Under these circumstances, it was reasonable for Dr Imran not to have ordered a CT scan which would have exposed the Appellant to unnecessary radiation. Dr Teo also agreed that when ordering a CT scan for younger patients of reproductive age, one would be very careful because it would expose certain organs, which are more sensitive to developing cancer, to radiation.

CGH

93 We now turn to consider the possible liability of CGH. Given our decision that none of the doctors is liable in negligence (see especially [78] and [82] above and [104] below), we need not address the contention premised on vicarious liability. In so far as CGH's primary liability is concerned, the

Appellant alleged that the hospital failed to have in place a safe system of health care that ensured that there was proper follow-up on the management of her medical condition.

94 As the Appellant's allegation of negligence against CGH was based mainly on its system of reporting radiology reports, we begin with a brief description of the system that CGH had in place. Although there was no such reporting system in place when the Appellant visited in 2007, by April 2010, CGH had implemented a system for reporting on X-rays. The evidence of the various doctors in this regard was largely aligned. First, the X-rays will be routed to the radiology department. A radiologist will review the X-rays and prepare a report. Depending on the findings of the radiologist, the report will be assigned a classification Level between one to five. A Level 1 classification indicates that all the findings are normal. A Level 2 classification indicates that there are some minor findings which are not clinically significant and do not require follow-up or the attention of the clinician. Levels 3 to 5 reports contain "abnormalities". Levels 3 to 5 reports will be stamped with "attention". Where the abnormality identified is critical, the report will be classified as Level 5 and the radiologist will directly inform the referring doctor of the result instead of waiting for the report to make its way to the relevant department. A Level 4 report would indicate that the X-ray revealed a clinically significant abnormality which may require early but not urgent intervention. A Level 3 report is one where an abnormality has been identified and for which follow-up is required but for which there is no urgency, unlike a Level 4 or 5 report.

95 The radiological reports for which abnormalities were detected, *ie* Levels 3, 4 and 5 reports, will then be routed to the department that ordered it. For that reason, the radiological reports on the April 2010 X-ray and July 2011

X-rays were sent to the A&E department for follow-up. According to both Dr Yap and Dr Soh, a senior doctor will go through the radiological reports and correlate the findings with the patient's clinical history. Those cases which are time-sensitive, presumably those marked Levels 4 or 5, would then be dealt with by the senior doctor personally. For those that are not time-sensitive, presumably a Level 3 report, the senior doctor will typically leave instructions for follow-up and then slot the report in the pigeon hole of a junior medical officer. The junior medical officer would then have to attend to the report and do the necessary follow-up when he reports for his shift the next time. If the senior doctor determines that no follow-up is necessary, then the report would not be routed to a junior medical officer.

Duty to ensure proper follow-up on a patient

96 We find no issues with the way X-rays are sent for reporting. But, we do have grave concerns about the treatment of the radiological reports after they have been prepared by a radiologist.

97 The Judge noted that there had been a gap in the evidence as to whether the follow-up process on the radiological report had been carried out in the present case. It was held, on a balance of probabilities, that it had been followed because there was no reason for CGH not to have done so in this particular case and it was also entirely plausible that the reviewing A&E senior doctor had decided not to recall the Appellant on the basis that the nodule was reported to be stable: see the Judgment at [118]. With respect, we are unable to agree with this finding. In our view, since the Appellant has shown that *both* the April 2010 and July 2011 radiological reports recommended that follow-up on the nodule be carried out, the evidentiary burden shifts to CGH to show that it *did* follow-up in some way. For example, this could be done by showing that a doctor did

see the recommendation but chose not to follow it for good reason. However, there is a complete dearth of evidence in this regard. First, the X-ray request form had apparently been disposed of. But, even if it had been adduced, all that it would have shown was that the radiological report was routed back to the A&E department. It would not indicate if an A&E doctor did see, review, and conduct the necessary follow-up. Second, and more significantly, there was no record whatsoever of the senior doctor who had supposedly reviewed the radiological reports and who made the clinical decision not to recall the Appellant. Given the complete lack of evidence showing that *some* action was taken, we find, on a balance of probabilities, that the procedure that was in place was not adhered to and that CGH had therefore failed to ensure that there was proper follow-up for the Appellant's case.

98 In any event, we are of the view that there were serious inadequacies in the system in place to ensure proper follow-up of patients. First, the standard of care expected of CGH entailed ensuring that radiological reports were properly followed-up with suitable attention accorded to them. The Appellant contended that, given the limitations of the A&E department, doctors from the A&E department ought not to be the ones reviewing the reports. We agree. In our assessment, the decision whether or not to follow-up as per the recommendations on the radiological reports where abnormalities have been identified cannot fairly be made by the A&E doctors for the same reasons why we found them not to be liable. As the doctors made clear in their evidence, the A&E department operates under severe time pressure and is focused on the acute episode that the patient presents with. It is not designed to provide a general health screening or to resolve all incidental findings that are picked up during the consultation. If so, it makes little sense for the system to route radiological reports on incidental findings back to the A&E department for

review. There was also no evidence adduced by CGH to show that the A&E doctors were able and best placed (as opposed to a respiratory physician) to make the decision in relation to whether the nodule ought to be followed up on. That an A&E doctor was the one who ordered it is not, in our judgment, sufficient reason in itself for such an arrangement. CGH offered no other reason in this respect. Moreover, there did not appear to be any structural or logistical difficulty in routing the reports to a specialist. The Work Instructions for the Notification of Critical Results by the Radiology Department issued by CGH already has in place a procedure for radiological results to be sent to outpatient clinics such as the CGH SOC when the X-rays are ordered by the said outpatient clinics. We see no reason why results pertaining to an area which a specific outpatient clinic would be able to assist with cannot be routed to that particular outpatient clinic instead of the A&E department. In the majority of cases, the question of who should follow-up on the radiological report is something that the radiologist would be well placed to decide. But, where the radiologist is genuinely unable to discern the appropriate department to follow-up on the case, he ought to mark it as a Level 4 or 5 report when it is sent back to the A&E department to enable the relevant senior consultant to make the call in a timely fashion. As counsel for the Respondent-doctors as well as counsel for CGH made clear, the A&E department is meant to adopt a targeted approach focusing primarily on the acute episode concerned, together with the patient's presenting symptoms. Doctors working in the A&E department can only dedicate a limited amount of time and resources to each patient in order to maximise the number of patients served. For this reason, we do *not* think it reasonable for CGH's system to be designed in a manner where ***all*** *incidental* findings are followed-up by the *A&E* department *instead of* a specific outpatient clinic that would be better equipped with specialised knowledge as well as the relative luxury of time and attention to ensure a proper follow-up. In the present case, the radiological

reports ought to have been seen and assessed by a respiratory physician instead of an A&E doctor.

99 Second, the system put in place by CGH to review radiological reports was inadequate because it did not allow for the comprehensive management of a patient. In particular, there was no appropriate mechanism for the consolidation of what was already known. Each time the Appellant attended at the A&E department, and each time a radiological report on her nodule was prepared, it was seemingly treated as an isolated incident. There was no evidence of any consolidation of what was already known about her. If the A&E doctor reviewing the radiological report had checked against Dr Imran's notes, for example, it would have become immediately obvious to him that the only specialist who had seen her over the past four years had mistakenly concluded that the opacity was resolving or had resolved, and the A&E doctor would have come to the conclusion that the nodule had been persistent and had not been properly assessed by a specialist. Under these circumstances, it would have been unreasonable to conclude that no follow-up was necessary. However, as Dr Yap explained, the A&E doctors did not have access to Dr Imran's medical notes. There were three main applications that an A&E doctor had access to. The first is "AEPSS". Although Dr Yap was unable to state what "AEPSS" stood for, he described it as a system that allowed A&E doctors to record their notes, as well as to retrieve notes from the patient's previous visits to the A&E. However, this system was used by the A&E department only and would ***not*** capture the patient's visits to ***other*** departments, such as the Appellant's visit to CGH SOC. The second application, "Sunrise", was used by the doctors to see the results of any tests that they had ordered. It also records investigation findings from previous visits. Unlike AEPSS, Sunrise was not used exclusively by the A&E department and appeared to be used hospital-wide. The third was an application

that allowed doctors to view X-ray images and manipulate them. It is unclear when the third application was introduced but it is undisputed that X-rays were viewed in wet film format in 2007. Thus, while Dr Yap was able to see from Sunrise that the Appellant had visited Dr Imran and that Dr Imran had ordered chest X-rays in two views, and had access to the said X-ray images, ***he was unable to access Dr Imran's notes*** as it was not an A&E consultation. According to Dr Yap, he had to rely on the Appellant's descriptions of what happened during her consultation with Dr Imran. This is unsatisfactory. Given that, as the Judge had found, CGH did not have a practice of sending its patients the report and test results from the scans conducted at the hospital, it was plainly unreasonable for CGH to rely on *the patient's* account of what happened at consultations outside of the A&E department. Further, by the time the radiological report was available, the Appellant was also no longer in the hospital to give an account to the *reviewing* A&E doctor. It is also for this reason that it was wholly inadequate for the system to designate the A&E department to be the reviewing department for *all* radiological reports ordered by A&E doctors. Put simply, how is an A&E doctor expected to make an informed decision about whether or not to accept the recommendation of the radiologist ***without complete*** *information* about a patient's visit to ***other*** departments in the hospital?

100 Third, it is unsatisfactory that there was no system in place to properly record decisions that were made. The process that CGH had for the review of radiological reports allowed two reviewing A&E doctors to both decide against the radiologist's recommendation to follow-up and yet not require any record of who these doctors were and their reasons for not following the recommendation. In other words, there was no procedure for the recording of such decisions. This not only meant that patients such as the Appellant would

not know the decision that was made and the reason for this decision but also, and more worryingly, that any doctor further down the line would have no reference against which to check why such a decision was made. Such a process also lacks accountability by the reviewing doctors. This is unacceptable and falls below the standard of care owed by CGH. We also note that there was no suggestion that there were reasons as to why it would be difficult for CGH to put such a system in place. Clearly, CGH was capable of putting in place and did have in place the AEPSS application for A&E doctors to take down their clinical notes and record their diagnosis and advice. There can be no reason why an A&E doctor or a specialist doctor *reviewing* radiological reports cannot use the same system or another similar application to record their decision regarding the follow-up of a patient.

101 Looked at in its totality, the patient management system that CGH had in place resulted, in the context of the present case, in a patient with a persistent nodule in her lung having been seen by only one respiratory specialist over a period of four years. The sole respiratory specialist had erroneously concluded that the opacity as seen on the chest X-ray was resolving or had resolved. Yet, the system did not alert any of the six doctors (Dr Yap, Dr Soh, their respective senior consultant doctors and the two reviewing doctors who received the radiological reports) who saw the chest X-rays thereafter and who were involved in her case to this mistake. The system also allowed the A&E doctors to decide not to follow-up on the case without any records of the reason(s) for doing so. In our judgment, CGH owed a duty to ensure that it had in place a system which would allow for the proper management of each patient and this includes the proper follow-up of radiological results. CGH failed to have such a system in place and was therefore in breach of its duty owed to the Appellant.

Causation

102 The gist of an action in the tort of negligence is damage. If the Appellant is unable to show that she sustained injury as a result of Dr Imran and/or CGH's breach of duty, her claim must fail. The Judge below found that the Appellant had suffered no damage because (i) she did not have cancer at the time of the various diagnoses and therefore there was no delayed diagnosis and (ii) she received the necessary treatment at the earliest possible time. For these reasons, the Judge found that causation was not proven and dismissed the Appellant's claim.

Whether the Appellant had cancer at the material time

103 The Judge found, on a balance of probabilities, that the nodule was not malignant between October 2007 and July 2011 because of its slow rate of growth which was inconsistent with the aggressive nature of ALK-positive lung cancer. There were also no noted features of malignancy on the X-rays that were taken during that period. The Judge took into account the fact that when the Appellant was diagnosed with lung cancer in February 2012, she was *clinically* staged at Stage I, which is a very early stage of the cancer.

104 We agree with the Judge that the nodule was more likely than not to have been benign as of November 2007. There is a paucity of evidence in relation to the state of the nodule at that time, given that it was first discovered only two weeks earlier. There were also no test results that we could take reference from given that the Appellant's next visit to the hospital was some two and a half years later. Even if there were CT scans and a biopsy conducted in April 2010, it would be difficult to even hazard a guess as to the state of the nodule in November 2007. Taking into account the relatively slow to no growth

of the nodule between November 2007 and April 2010, as well as the *relatively* early staging of the cancer as at Stage IIA in March 2012, we find, on a balance of probabilities, that the Appellant did not suffer from lung cancer in November 2007. Her claim against Dr Imran must consequently *fail*.

105 We are, however, *unable* to agree with the Judge that the nodule remained benign *till July 2011*. In our view, the Appellant has shown, on a balance of probabilities, that she was suffering from lung cancer in July 2011. This conclusion is informed chiefly by two facts: (i) the short time period between July 2011 and March 2012; and (ii) the diagnosis of Stage IIA lung cancer in March 2012. Let us elaborate.

106 We begin with what are the indisputable facts. The Appellant was diagnosed with Stage IIA non-small cell lung cancer in March 2012, which was retrospectively identified to be ALK-positive. The lobectomy from which the diagnosis was derived was conducted on 29 March 2012. We observe, parenthetically, that we think it irrelevant for the purposes of determining if the Appellant had cancer in July 2011 that the Appellant was clinically staged at Stage I in February 2012. This is because the clinical staging was based mainly on impression and a biopsy. We therefore adopt the pathological staging done after the lobectomy in the interests of certainty. We also take into account the fact that the Appellant first exhibited related respiratory symptoms in November 2011. This was when the Appellant consulted Dr Wong at Raffles Medical Clinic complaining of cough, breathlessness and blood in the sputum.

107 We then turn to consider the biology of the tumour. According to the Respondents' own expert, Prof Goh, an ALK-mutation positive tumour must progress through Stage I to Stage IV. More specifically, the stages are:

Stage IA, Stage IB, Stage IIA. This means that the lung cancer that the Appellant had ***must have gone through*** Stage IA as well as Stage IB before progressing to Stage IIA by March 2012.

108 It also cannot be seriously disputed that without a biopsy carried out in July 2011 or earlier, we do not know for certain if the Appellant had lung cancer at the material time. In this regard, Prof Goh expressly stated upon cross-examination that we do not know if the Appellant had lung cancer in 2007 because there is no histological proof. The same reasoning would apply in 2010 and in 2011. But the question before us is not whether, as a matter of scientific truth, the Appellant had lung cancer in July 2011 or not. Rather, the question confronting this court is whether it is *more likely than not* that the Appellant did have lung cancer, based on the available evidence before us.

109 Reasoning backwards in a logical and principled fashion, the lung cancer must have gone through Stages IA and IB in the period leading up to March 2012. On the Respondents' case, the Appellant would have had to go through ***both*** Stage IA ***and*** Stage IB, and progress to Stage IIA between August 2011 and March 2012. We find this to be unlikely given the extremely short interval of only eight months. In our view, it is more likely than not that the Appellant **did** have lung cancer by July 2011. Given that there was no follow-up on the Appellant's case by CGH, there was understandably little evidence with regard to the Appellant's condition in July 2011 or the preceding months. Nonetheless, the following evidence and medical opinion (proffered principally by CGH) with regard to the rate of growth of the nodule supported our finding that it is more likely than not that the Appellant was suffering from lung cancer in July 2011.

110 Counsel for CGH, Ms Kuah, emphasised that the *presence* and *persistence* of the nodule itself says nothing, and that what was key was to look at the *rate of growth* as an indicator of malignancy. Ms Kuah relied on the slow rate of growth of the nodule between 2007 and 2011 in support of CGH's case that the nodule was likely to have been benign up till July 2011. To this end, she referred us to the measurements and findings of CGH's expert witness and radiologist, Dr Teo, which illustrated that the nodule grew very slowly over the period of four years. Dr Teo herself concluded that the nodule grew very slowly and arrived at this conclusion by calculating the "doubling time", which refers to the time taken for the nodule to double in size. Dr Teo's findings were also put to Prof Goh, who agreed that the nodule grew very slowly between 2007 and 2011, indicating its benignity. The calculations made by Dr Teo, and indeed, the other doctors who testified at trial were helpfully summarised in a table form by the Judge below (see the Judgment at [30]) which we now reproduce:

	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 Daniel 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

111 From the table above, although Ms Kuah is quite right that there was a slow rate of growth between ***2007*** and ***2011***, we disagree that the same could be said of the growth of the nodule between ***2010*** and ***2011***. In fact, when we questioned Ms Kuah about the *trend* of the growth of the nodule at the hearing of the appeal, Ms Kuah too replied that the most significant increase occurred between April 2010 and July 2011. In his expert opinion, Prof Goh noted that the size of the nodule remained fairly stable in the period "from 2007 to late April 2010". Thus, while the *overall* rate of growth between 2007 and 2010 was apparently slow and insignificant, we are doubtful that the same could be said if measurements were taken ***from*** 2010 onwards. Of course, such calculations could not be made since the nodule was subsequently biopsied and then resected in early 2012. However, because we are determining the malignancy of the nodule ***as at July 2011***, the slow rate of growth ***between 2007 and 2010*** would understandably be less helpful. Accepting Prof Goh's evidence that the nodule could have been benign scar tissue in 2007 only to have turned malignant sometime thereafter, the turning point could well have been in 2009 or 2010. It bears noting that Prof Goh did ***not*** determinatively pinpoint the time at which the nodule turned malignant and Ms Kuah conceded as much at the hearing before us. But in any case, the point we make here is that we cannot look at the whole period between 2007 and 2011, derive a rate of growth that may have been affected by an initially benign nodule, and conclude that the nodule ***remained*** benign till July 2011. This would, with respect, be a ***non sequitur***. On the flipside, the growth of the nodule between 2010 and 2011, which was more significant than that between 2007 and 2010, supports our finding that it was more likely than not that by July 2011, the nodule had turned malignant and the Appellant had lung cancer.

112 CGH's defence that the Appellant did not have lung cancer in July 2011 was also premised upon the asymptomatic nature of the Appellant as well as the benign appearance of the nodule as seen on the X-rays and CT scans. But these arguments are neither here nor there. In the first place, it is the Respondents' own evidence that most lung cancers in the early stages are asymptomatic. Thus, the fact that the Appellant did not suffer from any related respiratory symptoms as at July 2011 would not be helpful in determining if she had lung cancer. As for the benign appearance of the nodule, we observe that as late as December 2011, when the appellant was seen by Dr Wong at Raffles Medical Clinic and had a CT scan done, the initial diagnosis was a benign growth and the biopsy was ordered *only* for purposes of establishing a base line. It was only after *biopsy* at the clinical stage did Prof Sridhar diagnose the Appellant as suffering from Stage I lung cancer. Crucially, even as at February 2012, where we know for a fact that the Appellant *did have* lung cancer, the X-rays and CT scans continued to be bereft of any malignant features. Hence, the *lack of* malignant features on the X-rays and CT scans would clearly not be determinative of whether the Appellant had lung cancer or not.

113 Finally, there was some suggestion that the nodule could have been a benign scar tissue and that it was *possible* for such benign scar tissues to exhibit some growth in the absence of malignancy. We are not persuaded by this. There was nothing to support a finding that *this nodule* was a benign scar tissue; there was no evidence as to the prevalence of benign scar tissues that persist over a period of more than four years, *and* which exhibit growth, especially at the rate after April 2010.

114 For the reasons set out above, we are satisfied that the Appellant had lung cancer by July 2011 and reverse the Judge's finding in this regard.

Whether CGH's negligence caused a delay in diagnosis

115 We find, on a balance of probabilities, that a referral to a respiratory physician would have been made if there had been a proper system to ensure that the appropriate follow-up on the Appellant's case was carried out.

116 Dr Soh and his supervisor Dr Lim, both of whom were A&E doctors, candidly agreed that had they received the radiological report for the July 2011 X-rays, they would have referred the Appellant to a respiratory physician. The respiratory physician, who would be alerted to the persistence of the nodule over four years, would have come to the realisation that Dr Imran was mistaken about it being merely of infective nature. Both Dr Imran and the Appellant's expert, Dr David Breen ("Dr Breen"), suggested that the immediate course of action in these circumstances would be to (i) prescribe antibiotics and (ii) order for repeat X-rays to be done. If the nodule did not resolve, then a CT scan would have been appropriate. By July 2011, it would have been obvious that the nodule was not of an infective nature, having persisted over a period of four years. We find that it is more likely than not that the course of action taken in February 2012, namely a CT scan and a biopsy, would then have been recommended. This may have been done in order to create a baseline for comparison but the point is that the tests and procedures conducted in February 2012 would have been conducted at an earlier stage beginning in July 2011. We are satisfied, therefore, that CGH's negligence caused a delay in diagnosing the Appellant with lung cancer.

Loss and damage

117 We turn now to the issue of loss and damage suffered by the Appellant. We found above that CGH's negligence caused a delay in diagnosis of the

Appellant's lung cancer. In our judgment, if not for the delay in diagnosis, the following would not have occurred:

(a) the progression of the lung cancer from Stage I to Stage IIA;

(b) the growth of the nodule; and

(c) nodal metastasis (*ie*, spread to the lymph node).

118 Let us elaborate.

The progression of the lung cancer from Stage I to Stage IIA

119 We were persuaded that the cancer would have progressed swiftly between July 2011 and March 2012 (the time of resection) primarily because of its aggressive nature. We were greatly assisted by Prof Goh's evidence in this respect. Prof Goh maintained throughout cross-examination that "ALK mutation lung cancers are aggressive". Although he conceded at one point that *some* ALK-positive lung cancer may not behave aggressively, Prof Goh eventually opined that the Appellant's tumour was "not a slow-growing tumour *at the time it was removed in 2012*" [emphasis added]. Instead, the tumour bore the characteristic of "wanting to metastasise" and that "***this case*** is an ***aggressive*** EML4-ALK tumour" [emphasis added]. We accept Prof Goh's evidence that the lung cancer the Appellant had ***is*** of an ***aggressive*** type. But it is ***precisely because*** the ALK-positive lung cancer was prone to behave aggressively that any delay in diagnosis would be detrimental; in such situations, the timeline of treatment becomes especially important. Thus, even if only a short period of time had lapsed, we find it more likely than not that the cancer would have progressed in a substantial manner after July 2011. In the

present case, CGH's negligence caused a significant delay of *at least* seven months in diagnosis.

120 Specifically, we find that the delay in diagnosis allowed the lung cancer to progress to Stage IIA. According to Prof Koong, the appropriate treatment for Stage I lung cancer is still lobectomy. This is because anything less than a lobectomy would carry a much higher chance of recurrence within the remaining lobe. Prof Koong explained that the Appellant was young and had good lung function, and the doctors would have been "going in with the intent of a cure". As such, a lobectomy would have been recommended even if she had been diagnosed with lung cancer at Stage I. This must necessarily mean that but for CGH's failure to diagnose her in July 2011, a lobectomy would have been carried out before March 2012 and we find it unlikely that the lung cancer would have progressed to Stage IIA before resection.

The growth of the nodule

121 On a related note, when the tumour from the lobectomy was resected, it measured 3.0 cm. The evidence showed that the nodule had measured 2.6 x 2.2cm (radiological reports), 2.3cm (Dr Daniel Tan's measurement) or 2.13 x 2.47cm (Dr Teo's measurement) in July 2011. On all three measurements, the nodule grew in size between July 2011 and March 2012 (the time of the lobectomy). Evidently, the delay in diagnosis allowed the nodule to grow in size; had the lung cancer been detected earlier in July 2011, the lobectomy would have taken place earlier than in March 2012 and the nodule would have been smaller in size at the time of the lobectomy.

Nodal metastasis

122 We find also that if the lobectomy had been carried out when the lung cancer was in Stage I, it would have been unlikely that the Appellant would have suffered from nodal metastasis. Prof Koong stated, and Prof Goh agreed, that by definition, the Appellant was staged at Stage IIA because a lymph node had been found positive for cancer. Hence, if the Appellant had been treated when she was in Stage I, no lymph nodes would have been involved. In this regard, we accept Prof Goh's evidence that if the Appellant had Stage I lung cancer, the cancer would not have spread to her lymph nodes and there would have been no metastatic disease. Indeed, Prof Goh's evidence was that *this was not a slow-growing tumour in 2012 as there was microscopic metastasis in the lymph nodes with the characteristics of wanting to metastasise*, as compared to an earlier comparison of the nodule from 2007 to 2011. It stood to reason that if a lobectomy had been carried out when the Appellant was at an earlier Stage I, further metastasis (including to the lymph nodes) would have, on a balance of probabilities, been unlikely. In addition, although Dr Breen was unable to place a specific number, he stated that if a lobectomy had been carried out at Stage I, "the likelihood of nodal metastasis would have been lower…". We accept his evidence. Thus, we find that if the Appellant had been diagnosed with lung cancer in July 2011, it is more likely than not that she would not have suffered from nodal metastasis and any consequences that may follow.

123 We are therefore satisfied that causation has been shown and reverse the Judge's holding in this regard. Specifically, we find that the Appellant suffered from Stage I lung cancer in July 2011 and that if not for the negligence of CGH, she would have been diagnosed as such and treated accordingly in July 2011 or shortly thereafter. As a result of the delay in diagnosis, the lung cancer was

allowed to grow in size, spread to her lymph node and cause nodal metastasis, and eventually progress to Stage IIA.

124 Given the Judge's view that causation was not proven, there was no need for her to comprehensively assess the loss and damage that the Appellant could claim for. However, given our findings above on CGH's liability, the losses occasioned by CGH's breach now fall to be determined and assessed.

125 We observe that the trial below was not bifurcated. This means that the evidence led at trial, and the submissions on appeal, were not tailored or directed to the specific facts as we have found them above. Amongst other things, issues such as the impact of the stage at which the cancer was at, the size of the nodule, and the presence of nodal metastasis on the effectiveness of a lobectomy and the risk of relapse, for example, were not fully explored. This is also understandable given the multitude of issues that had to be resolved both at trial and on appeal. In the interests of fairness to CGH, and as importantly, to also provide the Appellant an opportunity to address the Judge on these matters, we order that the issue of loss and damage, including quantification (if any), be remitted to the Judge with leave for the parties to refine or revise their evidence so as to address the specific factual findings that have been made in this judgment.

126 We would only point out, at this juncture, that the Appellant did pray for damages for the loss of her future earnings or loss of future earning capacity, and made an alternative claim for damages to be awarded to her dependants in the event of her demise. In the circumstances, we disagree that the Appellant's claim was for the cost of her drugs for the next ten years and was therefore not for shortened life expectancy: see the Judgment at [47].

127 In closing, we would like to observe that given the prognosis of the Appellant and the protracted nature of the legal proceedings up to this particular point in time, the parties should explore the possibility of arriving at a settlement in relation to the issue of quantification. The Appellant will continue to face physical and emotional challenges as a result of her medical condition and we think that an amicable settlement will assist the Appellant in achieving some sense of closure and allow her to focus on battling her cancer and recovering as best as she can. An extension of this litigation is unlikely to be of any help to the Appellant in moving forward and making the fullest use of her time henceforth. In our view, given our finding that CGH was negligent and delayed diagnosing the Appellant with lung cancer, it would be appropriate for CGH to consider the possibility of a settlement in the interests of expediency and resolution.

Conclusion

128 For the reasons set out above, we find that CGH was in breach of its duty of care owed to the Appellant for failing to have in place a proper system to ensure adequate follow-up of the Appellant's case and that this resulted in a delay in diagnosing the Appellant with lung cancer. In the result, the appeal against CGH is allowed in respect of the aforementioned issues. We, however, remit the question of the loss and damage, including the quantum of damages to be awarded (if any), to the Judge for her decision.

129 The costs both here as well as in the court below are reserved pending

the decision of the Judge on the issue which has been remitted to her for her decision.

Sundaresh Menon	Andrew Phang Boon Leong	Judith Prakash
Chief Justice	Judge of Appeal	Judge of Appeal

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