SHERIFFDOM OF SOUTH STRATHCLYDE, DUMFRIES AND GALLOWAY

[2024] FAI 2

AYR-B479-19

DETERMINATION

BY

SHERIFF DESMOND J LESLIE, ESQUIRE

UNDER THE INQUIRIES INTO FATAL ACCIDENTS AND SUDDEN DEATHS ETC (SCOTLAND) ACT 2016

into the death of WILLIAM FRASER

Ayr, 8 December 2023

The Sheriff, having considered the information presented at the Inquiry, determines in terms of Section 26 of the Act that;

1) In terms of Section 26(2)(a) that William Fraser died at home on 4th November 2018 at 08:42 hours.

2) In terms of Section (2)(b) of the Act that William Fraser suffered an accident in the course of his employment at Tappet Hill, Cumnock resulting in ruptured right patella tendon caused by a fall from a flatbed lorry on which he was working which was treated by surgical repair at Ayr Hospital.

3) In terms of Section 26(2)(c) of the Act, William Fraser suffered a pulmonary embolism due to or as a consequence of a right calf deep vein thrombosis due to or as a consequence of the surgical repair of the ruptured right patella tendon suffered from the fall.

4) In terms of Section 26(2)(d) of the Act, William Fraser lost his balance in consequence of a trip whilst working on the high deck of a trailer he was unloading and fell to the ground causing injury to his right leg.

5) In terms of Section 26(2)(e) no precautions could reasonably have been taken but which, if it had been taken might realistically have resulted in the death of Mr William Fraser being avoided.

6) In terms of Section 26(2)(f) of the Act, any defects in the system of working namely the failure to adequately communicate post-operative care and medication have been addressed by Ayrshire and Arran Health Board. There were no defects in the system of working that could be said contributed to the death of William Fraser notwithstanding that there were defects in the system to communicate post-operative care and medication which defects have now been addressed and remedied by Ayrshire and Arran Health Board.

7) In terms of Section 26(2)(g) of the Act, there are no other facts relevant to the circumstances of the death of Mr Fraser.

In this Inquiry the Crown were represented by Mr Faure, Procurator Fiscal Depute. The family and next of kin of the deceased Mr Fraser were represented by Mr Forbes. Ayrshire and Arran Health Board were represented by Mr Paterson KC. Highland's Health Board were represented by Mr McSporran KC. Mr Carter was represented by Mr Malby.

PROCEDURAL BACKGROUND TO THE INQUIRY

A challenge was taken on behalf of Ayrshire and Arran Health Board to the competency and relevancy of the prospective evidence of the principal Crown witness, Mr Jon Dearing, Consultant Orthopaedic surgeon, formerly employed by Ayrshire and Arran Health Board and now in private practice. The challenge was founded on Mr Dearing's potential to compromise his impartiality on the basis of the circumstances which had resulted in Mr Dearing leaving the employment of Ayrshire and Arran Health Board which, it was argued, may have created an adverse animus on the part of Mr Dearing against Ayrshire and Arran Health Board. His exclusion from the Inquiry was opposed by the Crown who submitted that Mr Dearing was a competent witness, was an impartial witness, and it was for the Court to consider his evidence set against all other evidence in the case. I considered that it was relevant to hear the evidence of Mr Dearing and to attach what weight there was to his evidence based on the normal tests of my assessment of his credibility and reliability without any pre-judgement as to the circumstances which had brought about his departure from Ayrshire and Arran Health Board. I therefore repelled the submission on behalf of Ayrshire and Arran Health Board.

That notwithstanding the terms of the revised Note by the Crown in terms of Rule 3.7 of the Act of Sederunt (Fatal Accident Inquiry Rules 2017) that the Crown would not explore "missed opportunity" theory that may apply to Highland Health Board. Evidence was led by the Crown inferring such a possibility. As a consequence the

Inquiry was adjourned on day three to enable representation to be made on behalf of Highland Health Board. Highland Health Board were subsequently admitted to the Inquiry as participants.

A transcript of the evidence from days 1 and 2 of the Inquiry was not available. It could not be established why this had occurred. I am grateful for the efforts of all parties to assist the representatives of Highland Health Board to appraise themselves of the evidence and issues arising from the first and second days of evidence.

Parole evidence was heard from Miss Wendy Wemyss, the partner of Mr William Fraser, the deceased; Mr Peter Young, surgeon, University Hospital, Ayr; Doctor Cameron Brown, surgeon, University Hospital, Ayr, Nurse Practitioner Lancaster, University Hospital, Ayr; Mr Jon Dearing, consultant orthopaedic surgeon; Doctor Christian Michels, consultant orthopaedic surgeon, Raigmore Hospital Inverness; Nurse Practitioner Christopher Carter, Riverside Medical Practise, Inverness; Mr R.T.A. Chalmers, consultant vascular surgeon, and Honorary Senior Lecturer in Surgery, Royal infirmary, Edinburgh; and Mr Derek Wayne Thomas, consultant haematologist, University Hospital Plymouth.

Non-contentious factual evidence was set out in a Joint Minute.

LEGAL FRAMEWORK

This Inquiry was held under Section 1 of the Fatal Accidents and Sudden Deaths Etc. (Scotland) Act 2016. Mr William Fraser died following an accident at work and therefore was subject to a mandatory Inquiry in terms of Section 2(3) of the Act. The Inquiry is governed by the Act of Sederunt (Fatal Accident Inquiry Rules) 2017 and was inquisitorial in nature. The purpose of the Inquiry in terms of Section 1(3) of the Act was to establish the circumstances of the death of Mr Fraser and to consider what steps (if any) might be taken to prevent other deaths in similar circumstances. The Inquiry does not establish either civil or criminal liability. The manner in which evidence is presented to the Inquiry is not restricted. Information may be presented in any manner and the Court is entitled to reach its conclusions based on that information.

The accident at work which prompted the Inquiry was a fall by Mr William Fraser from the flatbed truck in which he was working. This in itself did not result in death. Rather, the subsequent medical treatment and after-care provided to Mr Fraser was reviewed and considered appropriate for an Inquiry due to the development of a pulmonary embolism potentially as a consequence of the soft tissue surgical repair to the ruptured right patella tendon injury suffered from the fall by Mr Fraser in the course of his work. No evidence was led regarding the actual accident which brought about the subsequent operation and post-surgical treatment. The facts of the accident were set out in a Joint Minute. There was no suggestion that the cause of the accident being Mr Fraser's fall from the flatbed of the lorry was avoidable.

FINDINGS IN FACT

1) William James Fraser was a LGV driver employed by Northborough Limited since 24th October 2016. In addition to his LGV licence, he held current training cards for excavators, agricultural tractors and LGV loading machinery. Northborough Limited were registered at the Business Centre, 24 Longman Drive, Inverness, IV1 1SU.
Mr Fraser lived with his partner Miss Wendy Wemyss.

2) Northborough Steel have a contract with East Ayrshire Council to upgrade roadwork and complete groundwork through a section of forest at a site known as Tappet Hill off the B7046, New Cumnock, East Ayrshire.

3) On 15th October 2018 Mr Fraser was instructed to travel from Inverness to Leeds. En route to Leeds his instructions changed and he was directed to travel to Glasgow to pick up an excavator and deliver it to a site at Tappet Hill, New Cumnock. On 16th October Mr Fraser collected the excavator and took it to the site which was located four to five miles along a coalmine access road. On arrival at that locus he parked his trailer in a designated turning area. His journey to Tappet Hill passed without incident.

4) Between 16:30 and 17:00 hours Mr Fraser commenced the release of the straps securing the excavator to the trailer. He was assisted by another employee, Mr Peter Goodlad. Mr Fraser accessed the high deck of the front of the trailer. His left foot struck

his right foot causing him to trip and to lose his balance; he slipped on the metal area of the flatbed of the trailer and fell to the ground.

5) On hitting the ground his right leg gave away causing him to collapse. He was unable to walk unaided and was taken to A & E at Ayr University Hospital, Dalmellington Road, Ayr, KA6 6PX by a colleague who had been present when the accident occurred.

6) Mr Fraser was operated on at Ayr University Hospital on 17th October 2018 by Mr David Young and assisted by Dr Cameron Brown. Mr Young performed a patella tendon tear repair on Mr Fraser's right leg. This operation lasted just over one hour. Mr Fraser was returned to the recovery ward after the operation. This was shortly after 6.00pm.

7) At the conclusion of the operation Mr Young dictated post-operative instructions to provide Mr Fraser with thromboprophyaxis comprising Dalteparin 5000 units post-operatively and once daily until discharge and thereafter 150mgs of aspirin once daily for five weeks thereafter. This instruction was dictated electronically. Mr Young advised in his note that Mr Fraser should partial weight-bear in a CAM splint for six weeks and commence full weight bearing two weeks post-operation. No formal risk assessment was conducted beyond Mr Young's post-operative assessment of Mr Fraser's condition and prognosis. The informal risk assessment which was carried out by

Mr Young was in line with the policy of Ayrshire and Arran Health Board and was subject to Mr Young's own experience in these matters.

8) The post-operative instructions to be provided to the recovery ward were prepared by Dr Cameron Brown, the assistant surgeon. He prepared a written instruction that Mr Fraser should receive 5000 units Dalteparin daily as an inpatient until discharge. Mr Brown did not record any requirement for aspirin to be prescribed on discharge. Dr Brown's note to the recovery ward did not reflect the prescription dictated by Mr Young.

9) The practice in the post-operative recovery ward was to administer prescription medication at or around 6:00pm. Mr Fraser, having returned to the ward after 6:00pm, did not receive the 5000 units of Dalteparin as prescribed, nor did he receive that medication prior to his discharge.

10) Mr Fraser was discharged from Ayr Hospital on the 18th October 2018, the day following the operation. He did not receive the prescribed medication of dalteparin prior to discharge. Mr Young did not see Mr Fraser prior to his discharge from hospital having been called to surgery for an emergency poly-trauma event. Ordinarily he would have seen Mr Fraser prior to discharge and reviewed his medication. He was therefore unable to assess Mr Fraser's condition on discharge or the terms of the immediate discharge letter.

11) Prior to discharge Advanced Nurse Practitioner Lancaster consulted with Mr Fraser. She recorded that he looked well and was upright on a chair and that he had been partially weight bearing on crutches. An earlier consultation with the physiotherapist assessed Mr Fraser as capable of partial weight bearing and mobilising safely. Mr Fraser was considered well enough to travel home to Inverness

12) An immediate discharge letter was prepared by Advanced Nurse Practitioner Lancaster. This made no reference to Mr Young's requirement that 150mgs of aspirin should be prescribed post-discharge.

13) Mr Fraser was provided with the immediate discharge letter on his discharge from hospital. It did not record that Mr Fraser had been prescribed aspirin of 150mgs daily for a period of five weeks. This letter was to be given to his GP. He was prescribed analgesics for pain relief; Mr Fraser, on his discharge from hospital, travelled by car to Inverness.

14) Mr Fraser was seen by Advanced Nurse Practitioner Carter at the Riverside Medical Practice on three occasions, namely 22nd October, 25th October and 2nd November 2018. His wound was inspected and noted to be healing and improving each time Mr Fraser was seen. There were no indicators symptomatic of deep vein thrombosis leading to a pulmonary embolism. Examination of both Mr Fraser's legs showed no abnormality. Mr

Carter had no reason to investigate what, if any, prophylaxis had been prescribed to Mr Fraser on his discharge from University Hospital, Ayr.

15) Mr Fraser telephoned consultant surgeon Mr Young two weeks after discharge concerned that he had received no appointment for a follow up consultation in Inverness. He reported no adverse reaction to the operation, nor did he refer to any symptom which may have prompted further investigation into the development of a thrombosis. On 2nd November 2018 a follow up hospital appointment was scheduled at Raigmore Hospital Out-Patient Clinic, Inverness. Mr Fraser was seen by consultant orthopaedic surgeon Mr Christian Michels. An X-ray was taken of Mr Fraser's right knee. Mr Michels was aware that Mr Fraser had been prescribed Dalteparin post-operatively and aspirin for five weeks to be taken daily thereafter on discharge from hospital. Mr Michels did not investigate whether or not the prescribed thromboprophylaxis was either appropriate or had been taken. At the consultation Mr Michels recorded that Mr Fraser seemed fine and was partial weight bearing. Mr Fraser had no complaint symptomatic of a DVT (deep vein thrombosis) nor was there any external evidence of such. Any latent DVT was asymptomatic. There was no evidence of swelling, tenderness, pain or shortness of breath which might indicate any abnormality to be associated with a DVT.

16) Mr Fraser reported no symptoms consistent with DVT at either of his consultations with Mr Carter or with Mr Christian Michels.

17) Mr Fraser died three weeks post-operatively with the post mortem showing a pulmonary embolism secondary to right leg deep vein thrombosis.

History

[1] Mr William Fraser was injured on 16 October 2018 in the course of his employment as a long distance lorry driver having sustained a ruptured patella tendon whilst falling from a flatbed lorry as he unloaded an excavator. He had travelled from Inverness to Ayrshire. He was 46 years of age and a little overweight but not morbidly so. He was taken to Ayr University Hospital where he was operated on the following day by Mr Peter Young, the lead surgeon. The operation was routine and uneventful and repaired the patella tendon rupture. Mr Young risk assessed Mr Fraser for a potential to develop DVT and concluded in his post-operative note that Mr Fraser should be prescribed a course of chemical thromboprophylaxis which comprised a low molecular weight heparin namely Dalteparin (5000 units) daily until discharge from hospital followed by aspirin (150mgs) daily for five weeks following upon discharge. The post-operative notes prepared by Mr Young specified that there would be prolonged rehabilitation and likely long-term stiffness to the knee. The post-operative notes and instructions to ward staff was in the following terms and was dictated electronically:

> "Routine observations requires Dalteparin 5000 units in house post-op and once daily until discharge, aspirin 150mgs, once daily thereafter for five weeks. Mobilise partial weight bearing with physiotherapist on cam splint,

> cam splint required for six weeks, can begin fully weight bearing after two weeks, after six weeks to rom brace allowing 30 degrees of flexion for the first two weeks, 60 degrees for the following two weeks and brace unlocked for subsequent two weeks. Mobilise with brace and begin physiotherapy thereafter. Follow up to be arranged in Inverness for removal of clips, wound check and ensure repair remains intact prior to beginning full weight bearing. Consider ACC repair if remains symptomatic."

Mr Fraser was assessed by Mr Young that his risk of developing a deep vein thrombosis was higher than average given that he had travelled from Inverness and was returning there, that there was a lower limb surgery, and that there was only partial weight bearing status; however the surgery had lasted less than 90 minutes which mitigated against any antithrombotic medication. Mr Fraser was returned to the ward in the evening after surgery. Crucially his return was after 6:00pm, which was the time, scheduled for the administration of prescribed medication. He therefore did not receive the Dalteparin. Dr Brown, the assistant surgeon had prepared a handwritten note for ward staff which he understood reflected the terms of Mr Young's post–operative instructions; that note did not make reference to Mr Young's prescription for aspirin. The handwritten note was not checked by Mr Young to determine if it conformed with the note he had dictated electronically. Mr Fraser was discharged the next day following a consultation with Advanced Nurse Practitioner Lancaster and a review of his general mobility by the hospital physiotherapist. Ordinarily he would have had a further consultation with Mr Young who would have had an opportunity of checking upon Mr Fraser and confirming his fitness for discharge and the prescription of any discharge medication. Unfortunately, Mr Young was diverted to undertake prolonged surgery for a poly-trauma event.

[2] Mr Fraser was provided with an immediate discharge letter from Advanced Nurse Practitioner Lancaster which made no reference to the failure to provide the prescribed Dalteparin prior to discharge nor to Mr Young's instruction that Mr Fraser should be prescribed aspirin at 150mgs for five weeks following on discharge. Mr Fraser was given analgesics and advised that there would be a follow up consultation at Raigmore Hospital Inverness within two weeks.

[3] In the interim, Mr Fraser saw Advanced Nurse Practitioner Carter at his local surgery in Inverness on three occasions. He complained of pain but otherwise showed signs of improvement. Mr Fraser received no intimation of an appointment at Raigmore. He therefore contacted Ayr Hospital and spoke to Mr Young who contacted Raigmore Hospital on his behalf. Mr Fraser met with consultant orthopaedic surgeon Mr Michels on 2 November 2018. His right knee was x-rayed and a new knee brace was fitted. There were no symptoms of any abnormality indicative of a potential or actual DVT. On the 4 of November 2018 Mr Fraser collapsed at home and was unable to be resuscitated. The post-mortem examination confirmed the cause of death was a pulmonary thromboembolism secondary to a right calf deep vein thrombosis.

[4] Unfortunately, a follow up letter from Ayr Hospital to Riverside Medical Practice was dated and typed the 9 November 2018, five days after Mr Fraser's death. That follow up discharge letter stated that there was no peri-operative complications, that Mr Fraser had physiotherapy advice appropriate to his condition, that he had been discharged on a six-week course of prophylactic high dose aspirin. Prior to his death

there had been no review of any requirement for thromprophylaxis undertaken by either Advanced Nurse Practitioner Carter or Mr Christian Michels.

[5] This Inquiry did not concern the accident suffered by Mr Fraser in the course of his employment, rather the Inquiry was concerned with the events following upon Mr Fraser's admission to hospital, his discharge therefrom and the treatment he received thereafter. There was no evidence that his fall from the flatbed of the lorry he had driven had brought about his death, or that reasonable precautions, if taken, unloading that lorry might have avoided his death. The Inquiry focused on the treatment of Mr Fraser on his discharge from Ayr University Hospital subsequent to a surgical procedure to repair a right patella tendon rupture which he had suffered from after a fall whilst unloading an excavator from the lorry.

[6] The facts were not in dispute and largely agreed by Joint Minute. Mr Peter Young, the lead surgeon, carried out a routine operation on Mr Fraser's right lower leg. The usual caveats were discussed with Mr Fraser before the operation and the prognosis in relation to the post-operative recovery provided. Mr Young gave evidence that he had advised Mr Fraser that he would experience pain throughout the recovery process and possibly beyond and that the recovery process would be lengthy and there would be a risk of clotting. Mr Young had the full consent of Mr Fraser to proceed. The surgical procedure was uneventful. Mr Young prepared a post-operative note electronically, which provided care instructions which would be communicated to the ward staff and physiotherapists on discharge for ongoing clinical treatment. Mr Young advised that Mr Fraser was to be subject to routine observation, that he should receive

5000 units of Dalteparin six hours after the operation and that he should receive that medication once daily until discharged from hospital; and thereafter 150mgs of aspirin for a period of five weeks thereafter. This note was prepared electronically. When Mr Fraser was returned to the ward post-surgery the drug distribution round had concluded and no Dalteparin had been provided to him. He would not receive this until the following day. Dalteparin is a prophylactic low molecular heparin. It is an anticoagulant extending the time blood takes to clot. It is used to treat deep vein thrombosis. In his assessment of the risk posed to Mr Fraser in his recovery Mr Young considered that there was a DVT risk higher than average having regard to Mr Fraser's occupation, his travel from Inverness, the lower limb surgery he had been subject to, his partial weight bearing status and his approximate four-hour return travel to Inverness. There was also consideration that Mr Fraser's BMI was slightly high at 32, which was a factor for consideration as to whether or not antithrombotic medication was necessary. Mr Young's risk assessment and his instruction for the post-operative medication was prepared by him electronically. He did not prepare the note for the hospital ward which was delegated to his operating assistant Dr Cameron Brown. Dr Brown reassessed Mr Fraser's risk of suffering a DVT as normal rather than heightened. He was aware that Dalteparin had been prescribed by Mr Young but did not pick up on Mr Young's instruction to provide 150mgs of aspirin. He considered that early mobilisation was appropriate and there was no need for pharmaceutical prophylaxis. Dr Brown's note was handwritten and was provided to the ward staff. In his evidence Mr Young stated that he had applied the NICE guidelines and hospital policy. The NICE guidelines were

vague in their terms and balanced a number of factors such a the slightly higher risk of DVT in lower limb surgery against the time taken in surgery which fell short of the 90 minutes which the guidelines stated would prompt the necessity of chemical prophylaxis. Mr Young considered that Mr Fraser's age (46) and overall level of fitness marginally turned the dial in favour of providing chemical prophylaxis in the form of a prophylactic low molecular heparin and aspirin. However, Mr Young acknowledged that the greater risk reduction of DVT would come not from chemical prophylaxis, but would stem from increased mobility and the weight bearing which Mr Young considered would allow the calf muscles to act as a pump preventing blood clots from forming. Mr Young considered the overall matrix presented by Mr Fraser shaded his decision to favour the prescription of thromboprophylaxis. There were known risks associated with low molecular heparin (Dalteparin) and aspirin, particularly excess bleeding, but on balance Mr Young assessed the risk reduction in Mr Fraser's case was, given the balance of facts applicable to his physical status and domestic situation, to be appropriate.

[7] In preparing his handwritten note to the ward staff Dr Cameron Brown did not include Mr Young's prescription for aspirin. Dr Brown's note formed the basis of the immediate discharge letter provided by Advanced Nurse Practitioner Lancaster. Mr Young accepted that thrombosis is a foreseeable, if remote, potential consequence of the operation performed on Mr Fraser's right leg; however the prescription of a thromboprophylactic in the form of aspirin was a subjective test and in terms of the NICE guidelines should be considered as a potential requirement but not as a

mandatory course which the surgeon should consider and advise upon. In Mr Young's view there was a slightly elevated risk of Mr Fraser developing a thrombosis and that medication might assist in preventing a clot formation. He considered aspirin could be of benefit on discharge but accepted that it was a balance between risk and benefit when prescribing chemical prophylaxis. It was a fine judgement and the decision might vary between surgeon to surgeon depending on the nature of the operation, the potential or evidence of bleeding, the age of the patient, and the medical history of the patient. Mr Fraser had no known history of blood clotting nor had there been a family history of such.

[8] In normal circumstances Mr Young would have reviewed Mr Fraser's condition and medication prior to his discharge from hospital, but Mr Young was called to a poly-trauma surgery and was unable to meet with Mr Fraser. He was therefore unable to confirm that Dalteparin had not been provided or that the discharge letter provided to Mr Fraser had not included reference to a prescription for aspirin. Mr Young had no further contact with Mr Fraser until approximately two weeks later when he received a phone call from Mr Fraser who was expressing concern that he had received no contact from Raigmore Hospital in Inverness for a follow up examination. Mr Young concluded that Mr Fraser had reported no "red flags" regarding his convalescence and in particular had reported no swelling or pain in his leg and that to all intents and purposes Mr Fraser's recovery seemed to be progressing well with no report of any symptoms which could be attributed to a DVT. Had there been any indication of DVT in the form

of swelling then Mr Fraser would have been referred for an ultrasound and the likelihood would have been a prescription for stronger blood clot reducing medication.

[9] Dr Cameron Brown had assisted Mr Young in the operation carried out on Mr Fraser. Although Mr Young had completed the post-operative notes by electronic dictation, Dr Brown prepared a handwritten post-operative instruction sheet which would be passed to the ward. The post-operative instructions prepared by Mr Young were not immediately available to the ward. The practice at the time was that the dictated note was prepared secretarially and returned, once typed, to the surgeon for checking. However, the handwritten post-operative instruction sheet which was prepared by Dr Brown goes immediately to the nursing staff in the recovery ward. This note is not checked by the surgeon. On this occasion, the note prepared by Dr Brown failed to record the prescription of 150mgs of aspirin set out in Mr Young's post-operative note. The consequence of this omission was a continuing oversight of Mr Young's instruction to prescribe aspirin post operation. The instruction to provide aspirin did not appear in the immediate discharge letter provided to Mr Fraser by Advanced Nurse Practitioner Fiona Lancaster and therefore did not record the prescription of aspirin and the dosage required. The discharge note was subsequently received by Riverside Medical Practice in Inverness, Mr Fraser's GP, who were therefore unaware of Mr Young's ongoing instructions to continue the prescription of aspirin.

[10] An additional issue was prevalent in that Mr Fraser should have received 5000 units of Dalteparin six hours post-surgery. However, Mr Fraser's admission to the recovery ward was subsequent to the delivery of the medication to the ward. The

prescription delivery took place at 6.00pm. Mr Fraser was returned to the ward after this time and therefore missed the round. He was discharged from hospital without receiving any Dalteparin.

Missed opportunity

[11] Mr Fraser attended a number of medical appointments on his return to Inverness. His discharge letter made no reference to a prescription of aspirin. Neither the Riverside Practice in Inverness nor Mr Christian Michels, the consultant orthopaedic surgeon at Raigmore Hospital, reviewed what, if any, thromboprophylaxis medication was prescribed or should continue. Evidence was given by Mr Carter and from Mr Michels who both confirmed that ordinarily they would not revisit or question any medication which had been prescribed by the operating surgeon. This was accepted practice which was not contradicted by any other evidence in the Inquiry. Mr Carter, the Advanced Nurse Practitioner at the Riverside Medical Practice, saw Mr Fraser on three occasions, namely the 22 October, the 25 October and the 2 November 2018. As the immediate discharge letter provided to Mr Fraser made no reference to a prescription of aspirin it was accepted that there would be no reason for Mr Carter to question the terms of that letter. Mr Carter had no complaint from Mr Fraser of symptoms indicative of DVT nor were there any observable symptoms. His routine examination of Mr Fraser's leg showed no abnormality. Had Mr Carter observed any symptoms of DVT it would have been recorded and advice taken by him as to what investigatory steps should be taken.

[12] Mr Christian Michels was unaware at his consultation with Mr Fraser that Mr Fraser was not on aspirin. The normal and accepted practice is that operation notes are not subject to question. They are not reviewed by the clinician at the follow-up consultation. This practice was not questioned in the course of the Inquiry by any of doctors who gave evidence. However, like Mr Carter, Mr Michels did not observe any signs of DVT, nor was there any physical complaint by Mr Fraser pointing to DVT. Mr Michels spelt out the potential symptoms of DVT such as leg pain, swelling and tenderness on the sole of the foot and in relation to the development of pulmonary embolism, there were no recognisable symptoms, particularly shortness of breath. These observations were in the main corroborated by Miss Wemyss in that in her evidence she had indicated there was no obvious physical signs of distress or symptoms associated with DVT from Mr Fraser excepting the complaint of pain, which he was advised to expect post-operation.

[13] The Crown in their Note in terms of Rule 3.7 of the Act of Sederunt (Fatal Accident Inquiry Rules) 2017 specifically state *inter alia*:

> "(iv) Whether the fact Mr Fraser did not receive any chemical prophylaxis contributed his death…… and specifically Mr Dearing's opinion that this was a missed opportunity the Crown are not going to pursue that line with either Mr Michels or Mr Carter in that the Crown will not allege that they should have explored chemical prophylaxis as a matter of course during or as a result of the their consultation with Mr Fraser".

The Crown go on to concede that it is accepted practice to take information from the immediate discharge letter presented to Mr Carter and the operation notes as read by Mr Michels at face value. It was therefore a matter of some surprise that the Crown

sought to explore what potential there may have been for the diagnoses of DVT from Mr Carter and Mr Michels, neither of whom had any indication of symptoms exhibited by Mr Fraser of a DVT or whether they observed any clinical symptoms which may have prompted further exploration. The evidence led by the Crown from Mr Dearing, the principal witness called by the Crown, as to what Mr Michels or Mr Carter may or may not have done was entirely speculative and was based on the hindsight of what is known to have transpired. The exploration of a hypothesis which the Crown indicated in their Note they would not explore did not assist in the determination of what reasonable precautions may have realistically resulted in Mr Fraser's death being avoided. I therefore did not consider the "missed opportunity thesis" to be of any value in assisting this Inquiry.

Analysis

[14] As has been set out the facts in this case are not the subject of dispute. Mr Young's post-operative instructions dictated by him and which formed his post-operative note were not given effect principally on account of a miscommunication between Mr Young and his assistant Dr Brown who prepared the written instruction for the recovery ward. In addition, the late return time of Mr Fraser to the recovery ward resulted in him missing the prescribed course of Dalteparin. Mr Young and Dr Brown were in variance in their risk assessments as to the post-operative treatment that should be received by Mr Fraser. It was advanced by the Crown in support of their contention that the lack of provision of thromboprophylaxis to Mr Fraser was in consequence of

obvious defects in the system of working and contributed to Mr Fraser's death. The Crown therefore asked that I should make such a determination in terms of Section 6(2)(f) of the Act. Whether such a determination can be made has to be considered on the balance of probabilities. Though there were undoubtedly significant defects and failings by Ayr Hospital in the communication of post-operative instructions and the hospital's adherence to a ridged set time for the delivery of prescriptions by the dispensary, I do not consider that such failures or defects in the system of working contributed to Mr Fraser's death. In other words, did the absence of thromboprophylaxis in the management of Mr Fraser's post-surgical care result in Mr Fraser's death. To frame it in another way, could Mr Fraser's death, on the balance of probabilities, have been avoided had the communication failure between Mr Young and Dr Brown not occurred, and had the pharmaceutical or chemical thromboprophylaxis been prescribed, delivered and monitored in the manner anticipated by Mr Young?

[15] The value of pharmaceutical thromboprophylaxis to prevent DVT and pulmonary embolism is an issue of some controversy. Its potential value to a patient requires to be weighed against the potential risks. The Crown have submitted that I should have regard to evidence of Mr Dearing, consultant orthopaedic surgeon, which the Crown have said broadly supported the their contention that, on the balance of probabilities, Mr Fraser would not have developed a fateful pulmonary embolism or that his risk of suffering a fatal pulmonary embolism would have been significantly reduced had he taken the prescribed thromboprophyaxis.

[16] Ayrshire and Arran Health Board in their submissions spend a significant amount of their argument seeking to undermine Mr Dearing's conclusion, not only on the grounds that his expertise as an orthopaedic surgeon falls short of the expertise required in considering the nature and type of operation undergone by Mr Fraser, but also on Mr Dearing's credentials and history with Ayrshire and Arran Health Board (AAHB) which might challenge his status as an independent expert witness.

[17] I considered that after hearing arguments on the admissibility of Mr Dearing's testimony that his evidence should be heard and considered for whatever value it offered. This is an Inquiry. It should not be an adversarial process. Mr Dearing had not declared a potential conflict of interest between himself and Ayrshire and Arran Health Board which might, "contravene all conventions and protocols required in an expert witness ". There was clearly contentious history between Mr Dearing and AAHB, which had resulted in Mr Dearing leaving AAHB. That history was not declared in either of his reports prepared at the instance of the Crown. There was some force in the argument I should not consider Mr Dearing as an independent and impartial witness. His resignation from Ayrshire and Arran Health Board regardless of his justification for his resignation cast a shadow over his apparent willingness to give evidence to the Inquiry on the instruction of the Crown. However, I did consider his evidence should be heard nonetheless. I had the impression that the Crown's insistence in the evidence of Mr Dearing was as Devil's Advocate to challenge what might have been more conventional and contemporary analysis of the efficacy of chemical thromboprophylaxis. The Crown in instructing Mr Dearing as an expert witness, given

his resignation from Ayrshire and Arran Health Board for what seemed to be political rather than for clinical reasons must accept that there was a significant potential for compromise of his evidence despite his assurances to the contrary. However, an Inquiry is inquisitorial by definition and I considered that Mr Dearing, who was a very personable and articulate witness, should be heard in evidence. Mr Dearing, however, did not impress me as a witness upon whom I could place a great deal of reliance. I did consider that he offered "an alternative view" against which I could consider the evidence of other experts. In particular, Mr Dearing considered that the risk assessment as to whether Mr Fraser might have developed a DVT was based upon his knowledge of operations involving arthroplasty or repair of a knee dislocation; neither had any application to Mr Fraser's surgery. Such types of operations constituted a greater injury than a patella tendon rupture and would predicate a raising of the risk of development of a DVT. Equally, had Mr Fraser undergone arthroplasty surgery then that would have given rise to an enhanced risk of DVT. In essence, there was a preponderance in Mr Dearing's evidence that the support for Mr Fraser having an elevated risk of DVT arose from a type of operation that Mr Fraser in fact had not been subject to. However, on the evidence of Mr Dearing, on each of the risk assessment tools produced by him, namely the Caprini Score, the Parvezzi Score and consolidated by the Plymouth Risk Assessment, the risk to Mr Fraser of suffering a DVT was low and there was a low likelihood of prophylaxis being offered: the emphasis following an operation of the type suffered by Mr Fraser was on mobilisation. The Plymouth Risk Assessment endorsed Mr Young's view that but for the potential immobilisation brought about by a four-hour

car journey, mobilisation was critical, however, in Mr Fraser's particular condition, chemical prophylaxis might provide additional protection. I agree with counsel for Ayrshire and Arran Health Board that Mr Dearing was defending his thesis that had Mr Fraser been taking the prescribed thromboprophylaxis, namely aspirin, on the balance of probabilities, he would not have suffered a DVT leading to a pulmonary embolism. Mr Dearing's evidence was distilled from an initial position in his first report that "on the balance of probability had Mr Fraser been taking aspirin he would not have developed a deep vein thrombosis and subsequent pulmonary embolism" to a qualified conclusion in his second report in which he says "it is not possible to say that even with the use of [thromboprophylaxis] Mr Fraser would not have developed a fatal pulmonary embolism". That conclusion was entirely consistent with Mr Young's similar conclusion that regardless of the prescription of thromboprophylaxis a DVT leading to a pulmonary embolism can occur. However Mr Dearing goes on to state that "The risk would however have been reduced significantly and the outcome may have accordingly been different". That can only be a speculative opinion. However, Mr Dearing's primary conclusion in his second report is entirely consistent with the other evidence of the Inquiry that the risk of DVT is maintained regardless of the prescription of thromboprophylaxis and there remains a risk of DVT leading to pulmonary embolism even when thromboprophylaxis is prescribed.

[18] The Inquiry was distracted by issues which may be of relevance in other litigation but not pertinent to the findings required by the Court in an FAI. I have already made reference to the "missed opportunity" fallacy. The Crown also canvassed

the implications of the miscommunication between the surgeons after Mr Fraser's operation. There was also considerable analysis of DVT risk assessments following upon surgical procedure. These are all worthwhile discussions and relevant to any surgeons appraisal of a patients risk of developing a DVT after surgery. However in the instant case Mr Young did in fact carry out an appropriate risk assessment and prescribed accordingly in line with NICE guidelines and AAHB policy as he understood it .The critical issue is whether or not in Mr Fraser's case the application of chemical thromboprophylaxis would have prevented his death or might have been a precaution which, if taken, might reasonably have avoided his death?

[19] Regardless of the formality or informality of Mr Young's risk assessment of the propensity of a DVT developing after lower limb patella repair surgery he undertook a risk assessment and in consequence of that, all factors considered, chemical prophylaxis in the form of 150mgs of aspirin was prescribed by him for a period of five weeks following upon surgery. This acknowledged that there was a low risk of development of DVT from the type of surgery performed on Mr Fraser. That was entirely consistent with the SIGN guidelines which acknowledge, "the evidence for the efficacy of pharmaceutical prophylaxis for more minor orthopaedic procedure [ie non-arthroplasty surgery] is weak".

[20] There were obvious defects in communication which resulted in Mr Young's instruction for prophylaxis to be prescribed to be either misinterpreted or misheard. There was also a rigidity in the delivering of the drug round to the ward. Both these matters have been subject to internal scrutiny by Ayrshire and Arran Health Board and

failures in procedure have been identified and addressed in consequence of a Significant Adverse Event review. The outcome of that review, I was advised, addresses the deficiencies in the practice within the hospital in that the surgeon conducting the operation has the contemporaneous responsibility for the post-operative instruction to the recovery ward. This is no longer deferred or delegated to an assistant surgeon, but will remain the responsibility of the operating surgeon. This practise now eliminates the potential for variance between what the surgeon records in the post operative notes and what is transmitted to the ward. I therefore need make no recommendation in that regard.

[21] The omissions brought about by miscommunication cannot in my view be said on the balance of probabilities to have contributed to Mr Fraser's death. There is considerable controversy as to the benefit offered by aspirin as an anti-clotting agent and its use as an anti-thrombotic medication. The evidence is inconclusive. Dr McNab of the Riverside Surgery in Inverness noted in correspondence that high dose aspirin as a prophylactic tends not to be effective in preventing DVT or pulmonary embolism post-operatively.

[22] This Inquiry is not a forum for exploring the relative merits of aspirin as an effective anticoagulant medication. Rather it is to determine whether any reasonable precautions might have been taken, on the balance of probablilities, which might have avoided Mr Fraser's death.

[23] Whether the thromboprophylaxis prescribed by Mr Young if taken by Mr Fraser would have avoided Mr Fraser's death is, in my view, speculative. Mr Young and

Mr Dearing concede that. Mr Young acknowledged that regardless of any thromboprophyaxis a DVT might still occur. However, I heard evidence from Mr R.T.A. Chalmers, consultant vascular surgeon and senior lecturer in surgery at the Royal Infirmary in Edinburgh, and from Mr Derick Wayne Thomas, a consultant haematologist with a specialism in blood coagulation. In the opinion of Mr Chalmers the failure to prescribe VTE prophylaxis (venous thromboembolism) had no influence upon subsequent events and in particular [Mr Fraser's] death. In his view, had he been the physician conducting the surgery, he would not have prescribed prophylaxis at all which would have been entirely consistent with the NICE guidelines referred to by Mr Young for non-arthroplasty knee surgery. He advised that those guidelines provide that in the case of lower limb soft tissue injury and non-arthroplasty knee surgery VTE prophylaxis is generally not needed for patients undergoing arthroscopic knee surgery where total anaesthesia times have been less than 90 minutes and there is a low risk of VTE leading to a risk of bleeding.

[24] Similarly, the recommendation of the American College of Chest Physicians Guidelines 2012 is that for patients with isolated lower leg injuries requiring leg imobilisation no VTE prophylaxis is required. He further advised that the SIGN guidelines (updated 2014) provide that patients undergoing less invasive orthopaedic procedures should be assessed for thrombosis and bleeding risks and pharmaceutical thromboprophylaxis considered, particularly in patients with prolonged immobility. Mr Fraser had been advised to mobilise almost immediately. The British Orthopaedic Association, I was advised, does not make any recommendation but urges the NICE

guidelines to be adhered to in combination with an ongoing risk assessment. On analysis of the history of Mr Fraser's admission to hospital, his surgery and discharge, and what role the absence of chemical thromboprophylaxis may have had in causing death from a pulmonary embolism was considered by Mr Chalmers in his report: he concluded that on the evidence and on the "available guidelines and literature [they] indicate there is no evidence for the routine prescription of VTE prophylaxis for patients undergoing surgery of lower limb". In the opinion of Mr Chalmers, the failure to prescribe VTE prophylaxis for Mr Fraser after surgery for patella tendon repair had "no influence on the subsequent development of deep vein thrombosis and fatal pulmonary embolism….. however, the failure to prescribe VTE thromboprophylaxis had no influence upon subsequent events and in particular [Mr Fraser] death." In his report and in his evidence Mr Chalmers disagreed with the original finding of Mr Dearing that "on the balance of probabilities had Mr Fraser been taking aspirin he would not have developed a deep vein thrombosis and subsequent pulmonary embolism". Contrary to that conclusion Mr Chalmers states that:

> "although aspirin is routinely prescribed as a thromboprophylaxis post joint replacement surgery, aspirins main use is as an anti-platelet; it is a drug that is routinely prescribed within orthopaedic practice. There is no evidence to show that aspirin reduces the risk of pulmonary embolism".

The conclusion of Mr Chalmer's report is relevant:

> "The available guidelines and literature indicate that there is no evidence for the routine prescription of chemical VTE prophylaxis for patients undergoing surgery for lower limb soft tissue injury. Therefore, in my opinion, the failure to prescribe chemical VTE prophylaxis for [Mr Fraser]after surgery for patellar tendon rupture had no influence upon the subsequent development of deep vein thrombosis and fatal pulmonary embolism………However the failure to

> prescribe VTE prophylaxis had no influence upon subsequent events and in particular this man's care."

Dr Thomas , consultant haematologist, coagulation specialist, and Chair of University Hospital Plymouth's thrombosis committee , in his report and in his evidence supported the opinion of Mr Chalmers in that Mr Fraser's death could not have been avoided had he received the prophylaxis intended by Mr Young. He advised there was no way of determining when a blood clot forms; that is significant as aspirin is arguably of little value in his opinion. Mr Thomas considered that that is particularly so if a clot has already formed. In his view it could not be said that Mr Fraser's death would have been avoided had the prescribed thromboprophylaxis been administered. Mr Chalmers considered that:

> "The clot that lead to the fatal PE could have formed in the right lower limb at any time from shortly after the original injury, even pre-surgery up to the day of death. On the morning of the 4th November the lower clot would have detached and caused massive pulmonary embolism. Lower limb blood clots, particularly after knee surgery, may form at any time generally up to four weeks after surgery, although it probably takes up to three months for the riskof DVT in most surgical procedures to return to baseline. In 2008 a study that looked at minor injuries, which included ligimental injuries but not surgically treated, the peak incident of VTE was around two to three weeks after injury…… frequently persons presenting with PE have no symptoms to suggest DVT before they develop PE."

In the opinion of Mr Thomas:

> "it's impossible to successfully argue that death from PE in the particular surgical setting of [Mr Fraser] could have been prevented by any form of prophylaxis, including aspirin……. Aspirin was omitted from the discharge prescription on 18th October and at outpatient review on 2nd November; prescription of aspirin would not have made any difference to [Mr Fraser's] outcome."

The most appropriate treatment in the case of Mr Fraser was to mobilise. That was entirely consistent with Mr Young's advice. It was Mr Thomas's view that given Mr Fraser's BMI the prescription of aspirin would have been unlikely had he been the prescribing surgeon. Reference was made by Mr Thomas and Mr Chalmers to the report prepared by Dr Currie who reviewed the report prepared by Mr Chalmers. Mr Currie, concurred with Mr Chalmers's conclusion. This was referred to in evidence. Mr Currie did not give evidence but in his report reviewing the report submitted by Mr Chalmers agreed that:

> "it may well have been that even if Mr Fraser had received his Fragmin (Dalteparin) on the night of surgery and gone home with aspirin, whether this was for three, five or six weeks, he may still have suffered DVT or a fatal pulmonary embolism. There is little evidence to suggest that any thromboprophylaxis regime significantly affects the overall outcome of surgically induced pulmonary embolism"

This report was not the subject of any cross-examination but nonethelesss, having been referred to in the reports by Mr Chalmers and Mr Thomas, and is entirely consistent with the ultimate view expressed by Mr Dearing, subject to his speculative qualification, and to the evidence of Mr Young. The SIGN guidelines are re-quoted: "The evidence for the efficacy of pharmalogical thromboprophylaxis for more minor orthopaedic surgery procedures is weak. …….No reduction in DVT events with prophylactic low-molecular-weight heparin for six weeks

Conclusion

[25] This Inquiry explored a number of issues peripheral to the central issue of the Inquiry which was whether or not the thromboprophylaxis prescribed to Mr Fraser might realistically have resulted in him avoiding a DVT leading to a fatal pulmonary embolism. It cannot be concluded, on the balance of probabilities, that had he taken the prophylaxis prescribed by Mr Young the outcome for Mr Fraser would have been any different. This Inquiry explored the miscommunications in the transmission of Mr Young's prescription, firstly to the ward and thereafter to Mr Fraser's GP. The opportunity for these miscommunications has now been addressed by Ayrshire and Arran Health Board in the Significant Event Analysis conducted by them. Essentially it will now be incumbant upon the operating surgeon to prepare the post operation note and the note to the ward. The prescription instructed by Mr Young was based upon Mr Young's risk assessement of the potential for the development of DVT as he was required to undertake as the operating surgeon. His assessment as to the requirement for chemical thromboprophylaxis is subjective, but in this case was entirely consistent with the NICE guidelines as supported by other risk assessment criteria to which I have referred. The fact of the matter is that Mr Young did risk assess Mr Fraser for DVT potential and assessed him as appropriate for chemical thromboprophylaxis but, in particular, insisted that mobility was essential and critical to recovery and to the avoidence of DVT. This Inquiry does not explore the efficacy of the chemical thromboprophylaxis prescribed by Mr Young. That is for medical authorities to undertake and is a matter of considerable controversy. On the evidence before this

Inquiry, and in particular, on the evidence of Mr Chalmers and Mr Thomas both of whom were exceptionaly diligent, fair and scrupulous in their analysis of the factors for discussion arising from Mr Fraser's death , there is little to suggest, sadly, that, had he been subject to the thromboprophyaxis regime prescribed by Mr Young, Mr Fraser's death would have been avoided. I refer to Mr Chalmer's conclusion in his report, with which I concur, that:

> "This unfortunate sequence of events did represent sub-standard hospital care . However the failure to prescibe VTE prophylaxis had no influence upon subsequent events and in particular this man's death."

I offer my sympathies to the family of Mr Fraser, in particular to Miss Wemyss, who was a stoic observer of the proceedings.