Neutral Citation No: [2021] NICoroner 7	*Ref:* 2021NICoroner7
*Judgment: approved by the Court for handing down (subject to editorial corrections)**	*Delivered:* 23/04/2021

CORONER FOR NORTHERN IRELAND

MRS ANNE-LOUISE TOAL

INQUEST INTO THE DEATH OF MARIE ELIZABETH HYLANDS

---

[1] The deceased, Mrs Marie Elizabeth Hylands, was born on 30 April 1946, and resided at 3 Irwin Place, Donaghcloney.

[2] On 30 March 2017 Mrs Hylands was admitted to Craigavon Area Hospital for an elective laparoscopic cholecystectomy (gall bladder removal). Due to complications during the procedure, it was subsequently converted to an open subtotal cholecystectomy.

[3] On 31 March 2017, at around 10.30am, while still in the recovery ward, Mrs Hylands suffered a cardiac arrest believed to be secondary to bleeding and was returned to theatre. Following this she was admitted to the Intensive Care Unit (ICU). Despite aggressive treatment her condition did not improve and she was returned to theatre on three occasions.

[4] On 26 April her condition deteriorated further and on 28 April, after consultation with her next of kin, aggressive support therapy was withdrawn and Mrs Hylands passed away at 5.58pm that day in Craigavon Area Hospital.

[5] Mr Simon Hylands, Mrs Hylands' son gave evidence to the inquest. He described how on 30 March 2017 his mother, whom he viewed as previously fit and healthy, was admitted to Craigavon Area Hospital for a planned operation on her gall bladder. Given her good health on admission to hospital he said he expected she would be leaving hospital in the same or better condition.

[6] He therefore described it as shocking news to hear early on 31 March 2017 that the hospital had phoned his brother to say there had been complications, his mother had required to be resuscitated and asked for the family to attend

immediately. He recalled his conversation with Mr Lewis, her surgeon, either that afternoon or the next day as being centred on asking questions as to what had happened. He believes he may have had an earlier conversation with someone else but was less clear on what that conversation entailed. He recalled there being a lot of emotion in the room. He understood the plan was to have further surgery to pack around where the bleeding was coming from, and in his view leaving that conversation, he thought that things were going to be ok. He explained how the family were still unsure as to what exactly happened other than the operation had become complicated.

[7] He said his mother remained in the intensive care unit until her death on 28 April 2017 and described his conversations with the doctors over the next few weeks as a changing story where one day he would be told things were ok and the next that they were to prepare for the worst and felt this was a rollercoaster and he just wanted a straight answer.

[8] In his evidence to the inquest Dr Lyness, State Pathologist, described his findings on autopsy. He was of the opinion that based on those findings and consideration of the clinical history the cause of death was 1(a) Multi Organ Failure due to (b) Peritonitis associated with small intestinal ischaemia following complications of laparoscopic cholecystectomy with both Coronary Artery Atheroma and Hypertension being contributing factors in the overall fatal sequence.

[9] He confirmed that evidence of peritonitis was visible at multiple locations at post-mortem which gave a picture of acute on chronic peritonitis. There was evidence of bleeding within the abdominal cavity. Evidence of damage to the intestines was visible however he confirmed that there can be difficulties establishing post-mortem breakdown and ante-mortem ischaemia, however the outer surface of what remained of the small intestine surface had scar tissue and acute inflammatory cells were present. He also found evidence of multi organ damage including the liver and also possible degenerative changes within the kidneys, which although could be associated with early decomposition, was consistent with the clinical diagnosis of renal failure. He explained that although there was no definite microscopic damage to the heart, there was evidence to suggest the heart had started to fail, including the accumulation of fluid within the heart sac, chest cavities and all four of the limbs. He described how the autopsy revealed at least moderate degenerative narrowing within the right coronary artery and noted that Mrs Hylands had also had been diagnosed with prolonged raised blood pressure which would have further increased strain on the heart and both would have rendered her more susceptible, to a degree, to a fatal outcome.

[10] In her evidence to the inquest, Staff Nurse Nicola Byrne, described how her first encounter with Mrs Hylands was at 11.30am on 30 March 2017 when she received her into recovery. She received the handover from the anaesthetist, who had outlined the post-operative plan and was involved in her immediate post-operative care. She was aware at this time it hadn’t been a routine surgery. Her

observations were stable at that point. 90mls of haemoserous (blood stained fluid) drainage was present in the drain. She described her as asleep but rousable to voice. Her observations were recorded every fifteen minutes initially, moving to thirty minute observations on the anaesthetic chart. Then when she was considered stable she was moved onto the NEWS (National Early Warning System) chart and her observations changed to 4 hourly. Mrs Hylands was on a continuous cardiac monitor at this time.

[11] At 11.45am Mrs Hylands complained of pain and was given IV morphine but Ms Byrne recalled this had little or no effect on her and she was still sore, however she described this was considered normal in patients experiencing a significant amount of pain. She continued to complain of pain and was given analgesia. On her recollection there was no ooze or swelling to the wound site and the abdomen was soft. She carried out observations which were normal and she noted the patient had not passed urine at this point.

[12] At 12.10pm the patient complained of excruciating pain and was visibly agitated and distressed. Although she explained this continuing pain and pain level would not have been unusual in a post-operative patient, she contacted Dr Maguire, Consultant Anaesthetist and explained Mrs Hylands' condition. She stated he prescribed a further 5mg IV morphine and observations continued to be monitored quarterly. As her oxygen levels dropped below 95% on room air she was placed back on 3L of oxygen as per the surgeon's instructions, however she explained how a drop in o2 levels would be common in patients who had received the amount of morphine that Mrs Hylands had had. She accepted the timing of her observations at this time as recorded in her statement did not accord with the medical notes and were at 12.30pm

[13] Mrs Hylands received further analgesia and at 2.30pm she was placed on the NEWS chart as she was considered stable. Although the NEWS score was not recorded on the documentation, Nurse Byrne clarified in her evidence her score was 2 at that time. She described how Mrs Hylands was reviewed by Dr Lewis, Consultant Surgeon. The plan was to monitor output as she had still to pass urine at this stage, to change the drain if it continued to ooze and inform surgeon, to do bloods in the morning and longtec and shortec was to be given. She could not account for the differing account in Dr Lewis statement for the inquest which said bloods were to be checked in the evening.

[14] At 4.30pm Mrs Hylands' NEWS score, although she accepted this was not recorded, remained at 2. At this time Marie Hylands described her pain to Nurse Byrne as mild. Accounting for the discrepancy with the other pain observations, Nurse Byrne explained that at that time Mrs Hylands had had a significant amount of pain relief, which in her experience can settle a patient. She was confident in her pain assessment, which was indicated by Mrs Hylands herself and that, at that stage, Mrs Hylands was comfortable. At 4.45pm she remembered discussing with the surgeon that she would change the drain and monitor the new drain output and

240mls were emptied from the drain at that time. She recalled at intervals Mrs Hylands appeared to be comfortable in between complaints of pain and a further 5mg of shortec was given for breakthrough pain. She confirmed that Mrs Hylands' pain did not give her any specific cause for concern nor did it suggest an escalation in care other than her contacting the doctor to review as had happened at 12.10pm. At 5pm she asked Dr Maguire to review Mrs Hylands again although she could not recall the basis for this request and the plan was to monitor patient for respiratory depression. Her shift ended at 5.30pm.

[15] She also described how she assisted in the care of Mrs Hylands, in a supernumerary shadowing capacity between the 12 and 14 April. She confirmed that as such she was not responsible for the direct decision making in respect of Mrs Hylands' care while in the intensive care unit.

[16] I find that Nurse Byrne acted appropriately and although she accepted that her NEWS record observations were incomplete and this is both unfortunate and highlights the need for appropriate record keeping, I do not find this had any bearing on Mrs Hylands' death.

[17] Staff Nurse Sara Sproule gave evidence to the inquest. She had then been working in the recovery ward for 2 years. She took over post-operative nursing care at 9pm on 30 March until 8am 31 March 2017 and during that time was involved in post-operative observations including wound and drain observations, urinary output and analgesia drug administration. She did not recall any particular issues being identified to her at handover at the start of her shift. She clarified in evidence that Mrs Hylands remained in the recovery ward overnight not because of any issues with her condition but because no beds were available on the ward overnight and clarified that she was moved to a side room because she had issues sleeping with the noise at around 9.30pm.

[18] At 9.30pm she administered drugs as per the patient's drug kardex and Mrs Hylands was repositioned and she advised she was more comfortable after this. She was commenced on oxygen overnight, which Nurse Sproule said was a safety measure, rather than something that was required, given the earlier administration of morphine. In her evidence she confirmed further observations were carried out overnight at 12.30am (when her wound and drains were also checked), 2.10am and 6am, she passed urine at 1am when wound and drain checks were completed and a wound and drain check also took place at 4.50am. She was also given analgesia and repositioned at 2.45am. I pause here to note that the NEWS chart also has observations recorded at 10pm on 30 March 2017 with Nurse Sproule's initials.

[19] Nurse Sproule described Mrs Hylands at this time as being typical, in her experience, of a post-operative patient. Her NEWS score was elevated to 2 overnight (it had previously been 0) on account of her being on oxygen, but her observations were otherwise unremarkable and stable overnight. Although her pain was described subjectively as 8/10 and 7/10 overnight despite analgesia, in her

experience the fact that she was able to sleep intermittently after the administration of pain relief and converse with her without difficulty and the objective fact that her heart rate and other observations remained stable meant that she had no concerns regarding Mrs Hylands having uncontrollable pain. She did however give pain relief every time it was asked for. While Nurse Sproule explained she was aware of the dip in blood pressure, she advised that experience would suggest the amount of morphine administered to Mrs Hylands and the fact that blood pressure naturally drops at night meant that this was no issue of concern. Regarding the lack of specific recording of amounts of urine output throughout the night in the fluids chart, Nurse Sproule confirmed that there was no procedure or policy in place at that time that required such recording as there was no history of renal failure, she was drinking and was noted to have passed urine post operatively. Notwithstanding this she did keep an eye on the amount Mrs Hylands was drinking.

[20] She did say with the benefit of hindsight, in light of Mr Diamond's report, to which I will come to later, that it would have been useful to have started monitoring her urinary output at 7am and also acknowledged it was her error not to record whether there was urine output at 6am on the NEWS chart. At 7am Mrs Hylands asked to use the commode rather than the bedpan. It was on return from the commode that Nurse Sproule noticed she had become very pale and became evidently distressed due to a lot of pain, so much so she could not take her heart rate as she had before with the finger monitor. Although there were no remarkable changes to her observations other than her BP being 110, Nurse Sproule described this visible distress and level of pain as "ringing alarm bells" for her. Despite not being mandated by the NEWS score she was concerned enough to contact the surgical Senior House Officer (a FY2) to review Mrs Hylands, another 5mg of intravenous morphine was administered at 7.30am and she changed her observations to hourly. At this time her NEWS score was recorded as 3 and Nurse Sproule accounted for the increase of one as being based on the BP of 110.

[21] At 7.30am Mrs Hylands was examined by the surgical doctor however Nurse Sproule confirmed she was not present at this examination. She described how an arterial blood gas was obtained and said this showed nothing of concern. She explained that throughout her shift the drain was checked but wasn't changed and 20mls of fluid in the drain was recorded. Fifteen minutes later at 7.45am further analgesia was administered. Between 7.45am and 8am on the 31 March she handed over to the day staff, during which the surgical doctor remained with Mrs Hylands and he was to contact the Registrar.

[22] I find that Nurse Sproule acted appropriately and promptly in seeking a medical review of Mrs Hylands at 7am. I find, on the balance of probabilities, that Mrs Hylands' condition did not merit such an intervention before that time. While it is unfortunate that the recordings on both the NEWS Chart and Fluid chart were incomplete, and this highlights the importance of accurate and timely record keeping, I do not find this had any bearing on the death of Mrs Hylands.

[23] Staff Nurse Orla McAtasney gave evidence to the inquest. In her evidence she described how she received a handover from night shift staff between 7.45am and 8am on 31 March, however she could not recall the contents of same. She explained if there had been any significant concerns she would have been told. As this has not been noted and she could not recollect same she is of the view that there were none expressed. She was aware, however, that Mrs Hylands had been experiencing pain and was on IV fluids and had been seen by the doctor. She viewed her as ill but stable. Dr McGuigan reviewed the patient regarding her pain and she described the plan was for further morphine 5mg to be administered and for Mrs Hylands to be referred to the Pain Team with a view to Patient Controlled Analgesia. She also confirmed in evidence there was to be a follow up on the bloods.

[24] At 9am her clinical observations assessed Mrs Hylands' NEWS score as 4 based on the Oxygen therapy via nasal specs and a respiration rate of 23. She acknowledged and accepted there were no NEWS score observations recorded after 9am. She explained this was due to the fact that she had been attending to Mrs Hylands at that time giving her a bed bath, repositioning her etc. and that she had intended to do them, however throughout that time she was able to visually assess her as she had been with her. She accepted in her evidence that given the fact that Mrs Hylands was unwell and had had a dip in her blood pressure that it was in fact a very important time to be taking her NEWS observations and she agreed they should have been done at 10am. Although there was no record of the drain output in the fluid chart she said she clearly recollected checking and the amount was 30mls as was recorded in her statement. She could not recall any concerns at this time and Mrs Hylands had received morphine at 8.30am and at 9.30am was seen by the Pain Team Staff Nurse McCartan who reviewed pain and prescribed further analgesia.

[25] Regarding the ongoing pain she described how she had no specific concerns as she was aware it took a while for the morphine to take effect. She described Mrs Hylands as comfortable on repositioning and described how they were chatting about music around this time. She said Mrs Hylands was in good spirts and alert and orientated. She said that at 10.25am however while washing Mrs Hylands she became unresponsive and stopped talking very suddenly, her eyes became fixed and she had a pale complexion. She pulled the emergency buzzer and Staff Nurse Laverty and Sister Smyth arrived. High flow oxygen was applied but no pulse was palpable so CPR was commenced by Staff Nurse Laverty. Doctor Bunting, Dr Thorpe and Dr Shevlin arrived and there was a quick return of circulation after 1-2 minutes of CPR. A bedside echo was performed and arterial line inserted. Blood tests showed severe metabolic acidosis and falling haemoglobin on subsequent tests. She stated that Mrs Hylands was intubated and returned to theatre.

[26] Nurse McAtasney accepted and I find that there was a failure to take observations at 10am as had been mandated. While I acknowledge that Nurse McAtasney has said that she was with her throughout that time and saw no visible markers of concern, the failure to take observations at 10am, which provide both an evidential and objective picture of a patient's current status, just 30 minutes before

Mrs Hylands collapse leaves a window of doubt as to Mrs Hylands' haemodynamic status at that time. The previous observations were therefore some 90 minutes before her collapse, at which time there had been an increase, although minor of her NEWS score based on an increased respiration rate. I also highlight that while the NEWS scores at that time may not have mandated an escalation of care, Nurse Sproule had been concerned enough regarding Mrs Hylands' ongoing pain to move her to hourly observations. I will refer further to this failing later in my findings.

[27] Staff Nurse Margaret McCartan gave evidence to the inquest, she could not recall treating Mrs Hylands however based her evidence on her notes. As a pain sister with 12 ½ years pain nursing experience, she explained her role is to ensure effective ongoing pain assessment and pain management, it would not be part of her role to query the reason for the pain however if on review she felt necessary she could seek an opinion of a doctor. She confirmed she does not advise other than on the issue of pain relief and does not take observations such as blood pressure as part of her assessment.

[28] She stated how she assessed Mrs Hylands at 9.30am on 31 March 2017 and her pain scores at 7am that morning were documented as 10/10. She described this as not having been unusual in a post-operative patient and indeed was a common occurrence. She clarified that she would have had access to Mrs Hylands' NEWS scores and would have been aware there were two consecutive 10/10 pain readings, however again this, in her experience, would not have been unusual and would not have constituted a red flag necessitating immediate escalation or review by a doctor. At time of assessment, Mrs Hylands was complaining of lower back pain and had already received 5mg of shortec orally followed by 2 rounds of 5mg of intravenous morphine earlier that morning prior to the assessment. She described these as potent analgesia. She discussed analgesia with the patient and recovery team and recommended increasing the shortec from 5mg to 10mg 2-4 hourly as and when required. As part of her assessment she would have taken into account the overall physical presentation of Mrs Hylands. If her pain was still not controlled, she was to receive intramuscular morphine as would be standard practice. She also reviewed and amended the drug kardex. She was to review Mrs Hylands at some point later that morning as would be her standard practice when making a recommendation for a patient.

[29] I find Nurse McCartan acted appropriately.

[30] Nurse Aideen McKenna gave evidence to the inquest. She confirmed Mrs Hylands was not one of her allocated patients on duty however on the ward they worked as a team as well as having individual patients. She confirmed her only interactions with Mrs Hylands were at 5.40am when she administered 4mg IV ondansetron for Mrs Hylands who was complaining of nausea and at 7.45am she erected an IV saline as per the surgeon's instructions after assessment.

[31] Three other staff nurses gave evidence by way of Rule 17 and all three noted Mrs Hylands' complaints of pain during this period for which they administered analgesia.

[32] In his evidence to the inquest Dr Andrew McGuigan described how he first met Mrs Hylands on the morning of 30 March 2017 when she was admitted for an elective laparoscopic cholecystectomy. He noted her history of right upper quadrant pain in keeping with biliary colic and investigations revealing gallstones in a thick walled gallbladder. He discussed the procedure with her and gained consent.

[33] He began the laparoscopic procedure with Dr Lauren Hackney, surgery trainee assisting. Mr Alastair Lewis, Consultant Surgeon was in theatre unscrubbed at this stage. He described how upon inspection the gallbladder was heavily calcified making manipulation of it very difficult. He said the duodenum was also densely adherent (stuck) to the anterior wall of the gallbladder and there was no view of the calot's triangle (the triangle containing the cystic duct and the artery). This was suggestive of long term inflammation which would cause the various abdominal organs to stick to the gallbladder. Due to these findings, they felt it unsafe to continue laparoscopically, due to the potential to damage important structures within the abdomen including the bile duct, and a decision was made to convert to open cholecystectomy. He explained Mr Lewis then scrubbed in and they shared the various parts of the operation equally, with Mr Lewis, as Consultant taking the lead surgeon role.

[34] Dr McGuigan described how on converting to open surgery frank pus was aspirated when the gallbladder was decompressed with a needle, in keeping with an empyema (an area of infection which can be caused by a failure to drain bile out of the gallbladder). This increased the scale of difficulty of the surgery and would have impacted on recovery time significantly as antibiotics would be required (going from one day to a week stay in hospital in usual cases). The gallbladder was dissected off the liver with diathermy from the fundus towards Hartmann's pouch. He described the area as very densely inflamed. The duodenum was densely adherent to the anterior wall of the gallbladder and dissected free with scissors. He described how this caused a serosal tear to the duodenum during dissection (where the outermost layer of the bowel had sustained damage but not the inner layers) and this was reinforced with sutures to guard against perforation. Such a tear, he said, would not have been uncommon where there was so much inflammation. He confirmed there was no perforation at this time. Some bleeding was encountered from the gastro-epiploic veins and these were controlled. He explained how Calot's triangle was very thickened and the view into this area limited. It was therefore felt safer to complete a sub-total cholecystectomy to prevent possible leakage into the abdomen. A large gallstone was impacted in Hartmann's pouch and removed with forceps. The cut ends of the gallbladder were closed in two layers of sutures and a drain placed in the gallbladder fossa. Haemostasis (prevention of bleeding) was satisfactory and the wound was closed and Mrs Hylands was then transferred to the recovery ward.

[35] He clarified it would have been hard to say how much this level of inflammation would have impacted on Mrs Hylands' daily life or how symptomatic she would have been, her being described as fit and healthy, but did highlight that her history was suggestive of periods of troubling pain in her right upper quadrant. He confirmed that with such a procedure (the subtotal cholecystectomy) there would be an increased risk of bleeding after the operation.

[36] The following morning he reviewed Mrs Hylands. He could not say whether this was due to his having been asked by Dr Antoniadis as she had been complaining of significant pain overnight or whether this may have been part of what would have been a routine post-operative ward round. Based on the fact that he referred to the latter in his statement, made much closer to the time and later evidence from Dr Antoniadis and Mr Lewis, I find on balance that it was the former. He saw her at 8.15am in the recovery ward and she complained of back and flank pain but he described how she denied any pain in her abdomen and it was soft on assessment apart from at the wound site which would be common. He described this finding as important as although high intensity pain could be indicative of bleeding, a more rigid or guarded abdomen suggesting muscle spasm, would be suggestive of bleeding and he made no such finding. He noted she was nauseated but had not vomited. He described how she was groaning in pain when he entered her room but was able to converse normally and answer his questions comfortably. He said when he examined her he noted she was peripherally warm and well perfused when shaking her hand. Again he said this was important as it would be suggestive of bleeding if the patient was cold to touch to the extremities, which Mrs Hylands was not, and this would point against bleeding. He described how he checked her most recent observations which he considered normal. He said with regards to bleeding that the earliest signs would be a rise in heart rate and respiratory rate, with a fall in blood pressure being a later sign.

[37] He accepted in his evidence that his note as to her normal heart rate was incorrect and was taken from an earlier observation two hours prior. He emphasised however all her other observations were normal and measured how well blood and oxygen were getting to the cells. He also accepted with hindsight her blood pressure at this time had been trending downwards. He noted there was 30mls of blood in the drain and said in his evidence that while that suggested no bleeding, due to the possibility of the drain becoming blocked by a clot and thus not giving a true reading of output, he would also always rely on other observations such as heart rate, respiratory rate and abdominal assessment. He noted her pain relief administration post operation in the drug kardex and clarified while it was a reasonable amount he would not have considered it excessive as such a wound would be painful even on breathing. He noted the results of her blood gas.

[38] On this issue, in evidence Dr McGuigan considered the differing values recorded for Mrs Hylands' PH level by Dr Antoniadis and himself. He confirmed these would have been from the same blood gas print-out and the value would be

important as a PH of 7.04 would indicate the patient was critically ill and thus would require urgent escalation and a PH of 7.41 would be within the normal range. Although Dr McGuigan acknowledged he was not an expert in the area of physiology but rather was speaking from experience, he said that the reading would not have been 7.04 for two reasons. One, he explained, was if the value had in fact been 7.04, Mrs Hylands' other blood results would have been expected to have been deranged, as they contribute to the overall PH levels. In this case both records of the bloods indicate normal levels for the other results. He evidenced this by the later PH result which was 7.05 and noted the markedly deranged result in the other areas of the blood test. Furthermore, Dr McGuigan described that in a patient with PH level of 7.04 one would expect abnormal observations and visual signs that showed the patient to be very unwell. As a result of his assessment he said he prescribed a further 5mg of intravenous morphine sulphate and asked the nursing staff to contact the acute pain team with regard to optimising her analgesia after which he said he planned to review her and did not order any further escalation.

[39] In his evidence he could not confirm when exactly he planned to review her, nor when he was later informed of her deterioration and return to theatre. While in his evidence he suggested that he intended to review her before the afternoon but had then been informed of her deterioration, I find, based on his initial near contemporaneous statement, that it was the afternoon when he was advised of her deterioration and he had not yet returned to review her by that stage. He accepted on questioning that in retrospect it would have been helpful to have ordered more frequent observations including urine output, to have ordered a CT scan and to get a more senior opinion. However, he highlighted the NEWS scores between 7am and 9am of themselves would not have warranted such an escalation. He said that it would be difficult in the absence of observations at 10am to say whether an earlier return to theatre would have been warranted; however her overall presentation and fact that she was conscious and alert and able to hold a conversation with reasonable blood pressure levels would point to a sudden deterioration and collapse. As to the genesis of a sudden bleed he explained it would be difficult to say and he confirmed her sudden collapse was not something he had anticipated based on his assessment at 8.15am.

[40] He described how on 20 April he assisted Mr Yousaf during a further laparotomy on Mrs Hylands. At this stage further areas of jejunal perforation (holes in the bowel) and necrosis (dying tissue) were identified. Another jejunal resection was performed leaving around 45cm of small bowel, which he described as very little bowel on which to survive and would have led to a very guarded prognosis. The remaining jejunum and terminal ileum were stapled closed and a plan made for further exploration in 48hrs.

[41] I find, on balance, that overall Dr McGuigan acted appropriately. Although he did fail to take an accurate record of her heart rate during his examination, I do not find that this rendered his assessment of her condition at that time inappropriate in light of all the other aspects of his assessment and in light of the fact that her later

heart rate was again within normal limits at 9am. I will return to Dr McGuigan's assessment later in my findings.

[42] Dr Antoniadis gave evidence to the inquest. He described how on 31 March he received a call from staff nurse in recovery regarding Mrs Hylands' complaint of severe post-operative pain after moving from the commode to the bed. He spoke first with the nurse, consulted the post-operative notes and assessed Mrs Hylands at 7.30am during which she told him she started having increased pain after she went back to the bed from the commode. During examination he found she had a patent airway, normal auscultation of the chest and her abdomen was soft not tender. While she mentioned abdominal pain at the scar and this was noted clinically there was no guarding. He described this as significant as one would expect a more guarded or rigid abdomen if there was post-operative bleeding. Her abdomen in his view was a good post-surgical abdomen. Her observations which he obtained from the monitor were within normal limits with the exception of her blood pressure at 110/60 which was mildly hypotensive but acceptable as it was the early hours of the morning and she had had morphine. He explained how bloods were taken to be sent to the lab and an urgent Venous Gas Blood sample was checked for the haemoglobin level as this could again indicate bleeding.

[43] He said in evidence his scribing of 7.04 as the PH level was a drafting mistake and should have read 7.41 with a lactate of 3. The haemoglobin was normal. After discussing with the Anaesthetic SHO on call, 5mg of IV morphine was given and Intravenous fluids were prescribed. He described her at assessment as in good form and talking. Indeed he recalls during the thirty minutes or so assessment them chatting about his accent and where he was from. His view at that time was that there was nothing suggestive in either the observations, blood venous gas or abdominal assessment of post-operative complications such as bleeding and that the pain she was experiencing was likely the result of first movements after surgery which would be common. He prescribed further analgesia. He did however send serum bloods to get a more accurate result from the lab, and at the surgical handover to the day team at 8am he asked for senior review on account of her pain and tasked the checking of the laboratory blood results which could not be available before 8am. He recalls Dr McGuigan being in the room but did not recall whether he was Registrar of the week who would be required to see Mrs Hylands. He described being extremely surprised later that day on return to night shift hearing what happened to Mrs Hylands and couldn't believe it as it was very unexpected as what he had seen at 7.30am was not a picture of post-operative bleeding.

[44] I find that Mr Antoniadis acted appropriately. He made an appropriate assessment, sought further bloods and appropriately escalated Mrs Hyland's care to a more senior clinician for review.

[45] In his evidence to the inquest Mr McKay, Consultant Surgeon, described how on 8-9 April 2017 he was the consultant on call and a surgical review of Mrs Hylands took place both days. He described how a CT scan was arranged on Sunday 9 April to see whether a new event had taken place such as a new perforation or overt

ischaemia, which did not show any significant free air or free fluid or collection. He addressed the concerns of Mr Diamond's report, which I will come to later in these findings, and said that despite the suboptimal IV contrast, he reviewed the scan himself and was and remains content it did not indicate that they should have intervened at that stage.

[46] He described how late morning of 12 April he saw Mrs Hylands when she was clinically deteriorating and had visible small bowel content in her drains which was indicative of a perforation. A laparotomy was performed with significant small bowel resection performed due to ischemia and perforation, which he explained he believed had flowed from the initial haemodynamic collapse after the first surgery, not the surgery itself. He described how there was significant small bowel contamination in the abdomen. He explained that the majority of the small bowel had to be resected and his concern was not only the reduced small bowel left which would have required ongoing nutritional support for Mrs Hylands, but also the ongoing ischaemia for which the prognosis was not good.

[47] He spoke to the Hylands family and advised what had happened in the surgery. He said she would require ongoing nutrition and that she was very unwell and had a high chance of not surviving and the next 48 hours would likely be indicative of whether she would survive. He reviewed her again on 13 and 14 April, provided advice on nutrition to the intensive care team and his last involvement was a discussion with colleagues on 20 April regarding the case on foot of which Mr Yousaf performed the laparotomy on 20 April 2017.

[48] He believed nothing more surgically could be done for Mrs Hylands. He said that the complications found in the initial surgery meant it was very different to a routine gall bladder operation and carried more risk, although he would not have added to what had been provided in the post-operative care plan than what had been.

[49] His view was that when she had her bleed, events occurred that made it difficult for Mrs Hylands to survive.

[50] I find that Mr McKay acted appropriately. His concern for Mrs Hylands' prognosis at this time was echoed by Mr Kieran O'Connor, Consultant Anaesthetist whose evidence was read into the inquest.

[51] Mr Alastair Lewis, Consultant surgeon gave evidence to the inquest. He said that he saw Mrs Hylands pre-operatively and discussed the operation. He explained one of his questions pre-operatively would have been how Mrs Hylands had been feeling and he said that from his recollection she had said that she had had grumbling symptoms in the area of the gall bladder, niggles and pains but nothing significant. He explained such a history would be common - reasonable episodes of pain that would have settled. He described how the procedure was commenced at 9am laparoscopically by Dr McGuigan and that the insertion of the camera was

straightforward and uncomplicated, however it was immediately clear to him that conversion to an open cholecystectomy was necessary in view of the dense adhesions found and the omentum was stuck on to where the bowel should be. He said he was of the view he couldn't even start to remove the gallbladder in this case laparoscopically. He scrubbed in.

[52] On converting to an open cholecystectomy he found a very scarred surgical field- the omentum, stomach and duodenum were found to be densely adherent to the gallbladder which would have been the result of an inflammation process. He described it as a solid mass of tissue rather than easily identifiable structures. He found a very hard calcified gallbladder which was then found to have chronic empyema (an abscess within the gallbladder) which would explain the dense adhesions. He described how mobilisation of the structures of the body of the gallbladder was difficult and a decision was made to perform a subtotal cholecystectomy. This essentially meant removing the part of the gallbladder that they could safely see and identify but leaving the lower end of it to protect the area of the bile duct. The gallbladder was opened and the pus drained. He said the gallstone was also densely adherent to the gallbladder mucosa and also proved difficult to remove and the internal opening of the cystic duct was ligated internally with a purse string suture. He explained such surgery could not be done bloodlessly due to the adhesions and anywhere you mobilise tissue that was as inflamed as this there would always be ooze. He recalls lots of packing throughout the procedure. He said the abdomen was irrigated, which would be a means of ensuring there was no ongoing bleeding that may not otherwise be identifiable and a check of the operative site made to confirm haemostasis, which essentially meant a check there was no ongoing active bleeding of the operative site. He described how a drain was inserted prior to closure of the abdomen.

[53] He later reviewed Mrs Hylands in recovery at 4.30pm and noted her drain contained around 250mls of fluid which he investigated and found to be blood stained irrigation fluid which was watery in nature rather than blood. He was confident that it was irrigation fluid with blood staining and if he was even unsure as to whether it was blood he would have taken her straight back to theatre. Her observations were stable and she showed no signs of hypo perfusion. He asked for the drain to be changed in order to allow any new blood loss to be detected quickly. He also asked for bloods to be checked later that evening with the surgical team to be informed if there was any change in her condition. He accepted in his evidence that he was unsure whether these bloods were ever checked and there has been no documentary or other evidence highlighted to me to show that these were completed. He did however say bloods would reveal little information and it would be the drain he would be most interested in.

[54] Mr Lewis explained that before he had a chance to review her personally the next morning, he was notified that Mrs Hylands had suffered a cardiac arrest associated with sudden significant bleeding over the space of a few minutes into the drain. When she was brought to theatre shortly after her resuscitation, he stated how what he found fitted with a picture of a sudden dramatic bleed. He said he found a

reasonable volume of fresh blood in the abdomen and explained rather than an open vessel bleeding he found that the source of bleeding was inferior and medial to the gallbladder remnant, essentially a raw surface of the liver was exposed just behind where they had been working. He felt that suturing the liver bed was not an option surgically due to concerns regarding protecting the liver pedicle and controlled the bleeding with packs, pressure and the use of potent topical agents to promote blood clotting. He sought the opinion of Mr Eamon Mackle, a more senior colleague, who concurred that was the optimum strategy and the plan was to remove the packs 48hrs later on 2 April 2017 in the hope that this would allow Mrs Hylands to regain a degree of physiological stability to improve the coagulation recovery. He confirmed at this stage there was no evidence of ischaemic damage to the bowel.

[55] He stated however that Mrs Hylands showed signs of deterioration in ICU on Saturday 1 April which necessitated an earlier return to theatre for a relook. At that operation he observed that no further bleeding had occurred since the previous day and a significant volume of blood stained fluid was washed out of the abdomen. He said the small bowel looked to be unhealthy compared to the previous day and was noted to have serosal bruising throughout its length but was contracting normally. He felt this was a likely result of the hypo-perfusion the previous day and had a significant effect on the prognosis going forward. He said that unfortunately there was no resolution and repair and there was instead an ongoing process of ischaemia and perforation.

[56] When questioned as to the reason for Mrs Hylands' sudden haemodynamic collapse on the morning of the 31 March, Mr Lewis agreed with the opinion of Mr Diamond, the expert on behalf of the Coroner, that it looked to be a picture of a slow ooze overnight and around 10.30am a more dramatic bleed. His reasoning for this was that it fitted with what they were seeing with the observations and the prior abdominal assessments, it fitted with the dramatic appearance of the blood in the drain at 10.25am and it fitted with what they found on the relook after her collapse. He explained that the body can have a small and steady ooze but over a period of time your body starts to compensate and things start to develop physiologically such as your bloods becoming acidotic. This prevents the blood clotting properly and a bigger bleed can occur. In his view the bleeding may have been a result of the mobilisation process of the gallbladder in an area of dense adhesions and scarring, not movement from the commode or on being washed. He noted the liver capsule had been adherent around the kidney but he again stated he was content that on completion of the subtotal cholecystectomy there was no active bleeding. He confirmed that if they had had a reason to go back to theatre, they would have done so.

[57] He confirmed his view that the observations at assessment at 7.30am were not characteristic of bleeding, the soft abdomen would have been reassurance and had he been there he would not have returned her to theatre at that time. He confirmed he had spoken to Dr McGuigan earlier that morning regarding his findings on assessment and felt there was a pain control issue not a risk of underlying bleeding. Regarding the suggestion of increased monitoring Mr Lewis explained Mrs Hylands

was in a high dependency area with high ratios of nurse to patient staffing with close observation by nursing staff. He did accept that the failure to take observations at 10am could be described as a missed opportunity as in his evidence he said whether the bleed would have been picked up at 10am was open to speculation. With regard to the independent expert's comments regarding a lack of documentation to confirm daily attendance of senior surgical team members in ICU he was emphatic that there would be daily visits to ICU patients by the surgical team, however they would not routinely write a note documenting their visit unless they had something to add or contribute to the management of the patient. This would explain the lack of documentation on certain dates.

[58] I find Mr Lewis acted appropriately and I will elaborate on this later in these findings.

[59] In her evidence to the inquest, Dr Claire Shevlin confirmed she was one of the Consultants covering Mrs Hylands' care in the intensive care unit and reviewed Mrs Hylands at least twice during this time. On 10 April she documented that she felt salient issues were her ongoing ventilation requirement, the ongoing need for low level inotropic support, a gastric ileus and indications of ongoing renal impairment. Her renal figures were improving and her white cell counts were dropping - although her C-reactive protein (CRP) (used to indicate infection) remained moderately elevated. She said was hopeful that her ileus was resolving as her bowels had started to move and her gastric aspirates were not excessive. She said she had not recorded nor did she recall any acute or new concerns with regard to Mrs Hylands' stability at that time. She felt she remained seriously ill and was very likely to be a prolonged wean from ventilation and a slow recovery.

[60] Her next review was 15 April 2017 by which point Mrs Hylands was 3 days after another return to theatre and she said she had been unstable for some time. She described how she had not been weaned from dialysis and was profoundly weak and as the days went on the prognosis was very guarded and they could do nothing else except to try to wean her from ventilation. For this, they were considering a tracheostomy. She confirmed there would have been a daily assessment from a member of the surgical team. A similar picture of her stay in ICU was presented by Dr Clarke, Dr Browne and Dr McKee whose statements were read into evidence by way of Rule 17. This included short periods of stability followed by serious deteriorations and follow up operations and continuing high levels of multi organ support.

[61] I find Dr Shevlin acted appropriately.

[62] Mr Thomas Diamond was instructed on behalf of the Coroner as an independent medical expert to give evidence to the inquest. His specialty is in surgery of the liver, pancreas, bile duct and gallbladder and he has been practising as a Consultant for 27 years. He confirmed he would be considered the most senior and experienced hepato-pancreato-biliary surgeon in Northern Ireland.

[63] In his report, which was read and adopted in full into evidence, he covered four main areas:

(i) Conduct of the initial gallbladder operation.

(ii) Post-operative monitoring and management in the initial 24hrs.

(iii) Operation on 31 March for bleeding and re-operation on 1 April.

(iv) Follow up in ICU, evaluation of intestinal ischemia and subsequent perforation.

[64] Regarding the initial gallbladder operation Mr Diamond in his evidence confirmed his view that it was the correct decision to opt for a sub-total cholecystectomy as it is a safety strategy. He explained that in cases such as Mrs Hylands, where there was such excessive inflammation in the gall bladder and the adjacent area containing the bile duct, it is extremely important to protect the bile duct as the inflammation can be so severe it isn't possible to correctly identify the anatomical structures. In the subtotal cholecystectomy the gallbladder is opened to drain the pus, the stones are removed and the majority of the gallbladder wall is removed, leaving part of the gallbladder adjacent to the bile duct area un-dissected, therefore protecting the bile duct. He confirmed that the incidence of post-operative bleeding in open subtotal cholecystectomies is around 2-5% even when the operation had been carried out properly and haemostasis achieved. He was content that during Mrs Hylands' operation everything was done appropriately, she was well and there was no bleeding.

[65] Regarding the post-operative management in the first 24 hours, Mr Diamond was of the opinion that the haemodynamic picture from 6am on 31 March was on a downward trend in blood pressure although he acknowledged the systolic pressure and pulse remained in the white zone on the NEWS Chart, which meant they were considered acceptable levels, and Mrs Hylands remained alert. He noted the haemoglobin was 106 at 6am having been 128 preoperatively, although he acknowledges some of this could have been due to blood loss during the surgery. The nursing record does indicate ooze ++ from the drain site on 2 occasions and on one occasion requiring the drain site dressing to be changed. The NEWS score increased from 2 to 4 between 6am and 9am. Importantly he says she was in severe pain as indicated by her pain scores and had a lot of analgesia, although he did clarify in evidence that pain was subjective and anxiety could lead to a patient feeling they were experiencing such high levels of pain. He did not disagree with the evidence of the other witnesses that a pain score of 10/10 would not be unusual after such an operation. The overall picture he said is suggestive of bleeding, gradual in manner initially, what he described as an ooze, but with a sudden profuse bleed leading to the haemodynamic collapse at around 10.30am.

[66] He raised the question of whether there was a window of opportunity between 7am and 10am before her collapse where a return to theatre could have stopped the bleeding and prevented the sudden collapse. Mr Diamond was of the view that rather than an immediate theatre return the overall picture between 7-9am was indicative of a need for escalation, with increased frequency of observations, urinary catheterisation with an hourly urometer for accurate urine output recording, a recheck of haemoglobin, a CT scan and notification of the Consultant Surgeon on call. He accepted that based on the NEWS scores Mrs Hylands was already receiving monitoring above the level of what NEWS required and was somewhat assuaged by the fact that Mr Lewis was in the hospital at this time.

[67] He said Dr Antoniadis's findings at 7.30am of a soft non tender (apart from the wound site) abdomen would indicate there was no free blood or bile in the abdominal cavity and no significant active bleeding, similarly with Dr McGuigan's assessment.

[68] As there are no observations in the NEWS chart after 9am he said it was not possible to ascertain in the interim period between 9-10.30am whether the haemodynamic status would have merited an immediate theatre return rather than just an escalation of care. However, in evidence, he noted she saw the pain nurse at 9.30am and given her discussion with her it seems likely her blood pressure was not low at that point, similarly the fact she was conversing with Nurse McAtasney right up until her collapse. He explained such a bleed as Mrs Hylands experienced at around 10.25am can happen very suddenly with a sudden loss of consciousness.

[69] Overall, he felt Mrs Hylands' deterioration was most likely due to gradual oozing compounded by a more major bleed at 10.25am. He highlighted bleeding is a recognised complication of gallbladder surgery, especially where there is such significant inflammation. An escalation policy would have been appropriate and this may have yielded useful information that may have suggested her recovery was not going as expected. Although he acknowledged that Mrs Hylands was in a high dependency unit recovery ward and had a higher intensity of monitoring ongoing. Importantly, he maintained his opinion that it is unlikely that an emergency theatre return would have been precipitated before 10.30am even if all of these steps outlined in his report had been taken and said that even if the observations had been completed at 10am, based on all the evidence, it was unlikely to have resulted in a higher NEWS score.

[70] Regarding the further operations on 31 March and 1 April, Mr Diamond felt these were indicated and performed in an appropriate manner. As were the further resections on 12 and 20 April.

[71] Regarding the follow-up in ICU, Mr Diamond considered whether the intestinal ischemia could have been detected at an earlier stage and a bowel resection carried out to prevent a subsequent perforation. While he acknowledged that intestinal ischaemia isn't his specialist area, his view was that Mrs Hylands' case most likely evolved from the time of the initial collapse and hypo-perfusion on

31 March as indicated by the appearance of the intestine at the laparotomy for pack removal on the 1 April. He said in his report he was uncertain about the exact mechanism of this but did say that the collapse led to a lack of blood supply which led to the ischaemic injury to the liver and intestine. These lead to acidosis with a high lactate which reduces the function of the heart which then required inotropes. Those inotropes adversely affected the kidneys which led to the need for renal dialysis. This organ failure can lead to oozing into the lungs which results in difficulties getting enough oxygen and the problems in those three important systems could lead to further injury.

[72] Regarding the indication for a 'second look' reoperation, he was of the view that while a suspicion of ongoing ischaemia would be indicated by a rise in the serum lactate and the ongoing necessity for inotropic support of BP, renal dialysis and ventilator support, Mrs Hylands had other complications which could have resulted in these. Her abdomen was recorded as non-tender and she did have a period of stability between 4-7 April which would not be in keeping with progressive intestinal ischaemia. On-going intestinal ischaemia and a re-look laparotomy was considered by the surgical team and he agreed the CT of 3 April showed no definite features of bowel ischaemia or infarction and would have provided reassurance to the surgical team.

[73] In his report and evidence, Mr Diamond raised a number of points about the further CT scan that was carried out on 9 April. In particular, the sub-optimal IV contrast enhancement which was in his view inadequate for the assessment of intestinal perfusion, which he noted as important in the context of consideration of whether there was ongoing ischaemia. The other issues were that in the request for the scan there is no mention of assessment of intestinal circulation. Secondly, administration of IV contrast through the central line was not considered. Thirdly there was no evidence of follow-up or even consideration of a follow-up despite the Consultant Radiologist's review of the scan indicating it was sub-optimal. Mr Diamond highlighted that when a CT scan is being done in such circumstances the requesting team should indicate exactly what clinical suspicions they have or what the queries are and the scan should always be of high quality with appropriate intravenous contrast. He did however say that notwithstanding these important points, while it was possible that a follow up scan could have precipitated an earlier operation before 12 April, in his overall experience with this degree of intestinal ischaemia, it would have been unlikely to have affected the ultimate outcome in this case.

[74] Although Mr Diamond has highlighted what he refers to as reservations, he was of the view that intestinal ischaemia was considered and monitored for by the surgical team and in his report he said he "can see how the decision not to perform a re-look laparotomy was taken, based on the clinical examinations and the CT scan on 3 April". He acknowledged such a decision can be very difficult as it would have been further major surgery for Mrs Hylands and he has the benefit of hindsight.

[75] He confirmed he concurs with the autopsy finding that Mrs Hylands' death was the result of multi-organ failure due to peritonitis, secondary to intestinal ischaemia and perforation which occurred following bleeding following the cholecystectomy.

[76] The evidence of Dr Clarke and Dr Browne documented the continued sad deterioration in Mrs Hylands' condition in her last days in ICU after the final laparotomy on 20 April. This lead to an ultimate withdrawal of aggressive therapy care after a number of discussions with family members, a second opinion from another Consultant in Royal Victoria Hospital and a multi-disciplinary meeting to discuss Mrs Hylands case. On 28 April Mrs Hylands deteriorated further and with family agreement aggressive therapy was withdrawn and Mrs Hylands passed at 5.58pm on 28 April 2017.

[77] Mr Diamond explained that while the fact Mrs Hylands developed slow bleeding was not uncommon, and such bleeding can be drawn out through the skin, her case developed a sudden bleed, which he described as a very sudden haemodynamic collapse, which would be very rare in this scenario.

[78] I find that the initial subtotal cholecystectomy was appropriate in the circumstances and indeed was the safer course in light of the extensive adhesions and the empyema. I find on the balance of probabilities, based on both the evidence of the surgeons and the independent expert, that at the conclusion of the operation there was no active bleeding. I also find that the later operations were undertaken and carried out appropriately.

[79] I find on balance that Mrs Hylands was experiencing a slow bleed or oozing after the initial operation, a recognised complication of such surgery. However, a sudden profuse bleed occurred around 10.25am, when there was a sudden increase of fluid into the drain and Mrs Hylands suddenly became unresponsive and entered a period of haemodynamic collapse.

[80] With respect to the time period in the run up to this collapse, I find that Mrs Hylands' observations, with the exception her blood pressure which in retrospect had a downward trend but remained within acceptable limits, remained within normal limits. I find they did not of themselves merit a return to theatre. I find that her pain at 7am was escalated appropriately and Dr Antoniadis and Dr McGuigan's assessments were appropriate and were not suggestive of post-operative bleeding. I find that the PH at this time was 7.41. This is based on the acceptance of Dr Antoniadis that it was a scripting mistake and all the evidence of both the surgical team and the independent expert that 7.41 fitted the picture and other observations and results at that time, not 7.04. Although the escalation in care highlighted by Mr Diamond (he acknowledges with the benefit of hindsight) would have been appropriate for gathering more information at this time, on the balance of probabilities, I find, based on all the evidence, that an emergency return to theatre

would not have been precipitated before her sudden profuse bleed and collapse at 10.25am.

[81] I find that the failure to take observations at 10am provided a missed opportunity in Mrs Hylands' care and treatment, however I find on the balance of probabilities that it would not have altered the outcome in Mrs Hylands' case. In light of all the evidence, I find that in the period after 9am but before Mrs Hylands' collapse, it is unlikely that her blood pressure was significantly lowered.

[82] I find that this sudden profuse bleed and haemodynamic collapse resulted in ischaemic damage to Mrs Hylands' small bowel and liver and despite operating and subsequent aggressive care therapy in the Intensive Care Unit the ischaemia in her bowel continued and led to perforation. Appropriate attempts were made to resect the bowel. I find that the CT scan ordered on 9 April was sub-optimal and Mr Diamond's recommendations should be taken on board by the Trust, however I find on the balance of probabilities that the failure to order a re-scan did not affect the outcome. Mrs Hylands' condition further deteriorated and she sadly passed away after the decision to remove aggressive therapy was made. I find her care in the Intensive Care Unit was appropriate.

[83] I find in light of the findings of the post mortem report and the evidence heard at the inquest that the cause of death was:

1(a) MULTI-ORGAN FAILURE

due to

(b) PERITONITIS associated with SMALL INTESTINAL ISCHAEMIA following COMPLICATIONS OF LAPAROSCOPIC CHOLECYSTECTOMY

2. Coronary Artery Atheroma, Hypertension