D E T E R M I N A T I O N

by

NOËL McPARTLIN, Advocate, Sheriff of Lothian and Borders at Edinburgh

in

Inquiry in the circumstances of the death of

ISOBEL GRANT (Born: 14 July 1924)
Residing latterly at 80/4 Orchard Brae Avenue, Edinburgh

Under the Fatal Accidents and Sudden Deaths Inquiry (Scotland) Act 1976

Parties to the Inquiry:

1. Miss Lucy Proctor, Procurator Fiscal Depute.

2. Lothian Health Board, represented by Mrs Elaine Coull.

EDINBURGH, January 2008

The Sheriff, having resumed consideration, determines as follows:-

1. That Isobel Grant, born 14 July 1924, formerly of 80/4 Orchard Brae Avenue, Edinburgh, died at 8.15 pm on 3 November 2005 at the Royal Infirmary of Edinburgh.

2. That the causes of death were:-

   (i) Primary Causes:

      (a) Acute myocardial re-infarction;

      (b) Multiple previous infarctions;

      (c) Severe coronary arteriosclerosis.

   (ii) Secondary Causes:

      (a) Previous hip replacement;

      (b) Multiple small pulmonary emboli.

Sheriff

NOTE:

On 4 October 2005, Isobel Grant, who lived in Edinburgh with her husband, Eric McCallum Grant, a retired Chartered Surveyor, went to her keep-fit class in Blackhall Church Hall. During the class, she had a fall, which fractured her left hip, and she was admitted to the Royal Infirmary of Edinburgh that day. Surgery was required to repair the damaged hip by effecting a partial replacement.

While she was waiting for the operation, Mrs Grant was not mobile in that she could not easily sit up. It is known that lying in bed following the trauma of a fall creates a risk of the development of deep vein thrombosis and blood clots and Mrs Grant was given medication for that. She also suffered from confusion and agitation, which are typical for patients in her situation, and her relatives were concerned that she might try to climb out of bed. In the event, in spite of the cot sides being up, she did climb out of bed during the night 8-9 October 2005 and fell to the floor. From clinical examination, it appeared that the fall caused no further fracture.

On 9 October 2005, the hip operation was carried out successfully. In the days following, efforts were made to mobilise Mrs Grant. However, on 13 October, her condition suddenly deteriorated when she began to have difficulty breathing and had to be given oxygen. The presence of pulmonary thrombal emboli, or blood clots in the lung, was diagnosed. These would have derived from the onset of deep vein thrombosis in the legs or pelvis at some uncertain earlier time. Although Mrs Grant continued to receive, as she had done since her admission, medication to counteract the formation of blood clots, it was not safe to introduce the use of a more powerful "clot busting" drug because of the danger of causing bleeding at the site of the hip operation. By 15 October Mrs Grant had suffered multiple organ failure of lung, heart and kidneys, as a result of the pulmonary emboli.

By 19 October, her condition had improved sufficiently to allow her to be transferred to the renal unit, where she had dialysis. Sadly, the decline resumed, with complications in the right lung, reduction in the level of consciousness, diarrhoea and infection from the bug C difficile. Most significantly, Mrs Grant's heart was under stress and an ECG on 1 November suggested ischaemia (poor flow of blood to the

heart) or a possible heart attack. When Mrs Grant died two days later, one of the primary causes of death was myocardial re-infarction, a heart attack, which the pathologist indicated would have occurred about three days before death, her life having been prolonged by care.

The first witness led to give evidence in the Inquiry was Eric McCallum Grant. Mr and Mrs Grant had two daughters, one of whom lives in Canada and the other, Mrs Lindsey Edwards, is a school teacher living in East Sussex. Mrs Edwards also gave evidence to the Inquiry.

Both Mr Grant and Mrs Edwards had concerns about Mrs Grant's treatment in the orthopaedic trauma unit, where she was taken for the hip repair surgery. Their primary concern related to the delay in the performance of the operation. From the date of admission, Mr Grant was told that Mrs Grant was tenth on the list of patients to be operated upon and was given the impression each day that the operation would be the next day. In the event, Mrs Grant was not operated on until her fifth day in hospital.

If Mr Grant and Mrs Edwards had been aware from the beginning that there would be a five day delay before surgery, they would have considered seeking treatment for Mrs Grant elsewhere. Mr Grant felt that her case was not treated as an emergency, that she was left immobile and drugged up and Mrs Edwards was concerned about the risk of blood clotting. In addition, Mrs Grant was becoming confused and agitated, possibly due to the drugs that she was being given. Mr Grant and Mrs Edwards spoke to hospital staff about their concern that Mrs Grant might try to get out of bed and suggested that it might be appropriate to restrain her in some way. The staff was not prepared to use restraints but indicated that a nurse would be posted by Mrs Grant's bed.

Unfortunately, as I have mentioned, Mrs Grant actually fell out of bed onto the floor the night before her operation, as Mr Grant and Mrs Edwards learned on their next visit from other patients in the ward, not from hospital staff (although it is not known whether any of the staff saw the visitors arriving).

The consultant responsible for Mrs Grant and who dealt with Mr Grant and Mrs Edwards is now in America and was not available as a witness to the Inquiry. Evidence, however, was given by John Keating, consultant orthopaedic surgeon and lead clinician within of the orthopaedic trauma unit, who had reviewed the notes relating to Mrs Grant and which were productions at the Inquiry. From his evidence, to which I shall return, the unit, which was the busiest of its kind in Scotland, had the use of only one theatre (theatre 20) full-time (8am to 8pm seven days a week) and of another (21) for six half day sessions per week. Normally, an operating list was compiled for each day plus a pending list. Patients moved up the lists as operations were done but it was not unusual for the operating list for a given day not to be completed that day. It appears that Mrs Grant began as eleventh on the pending list and that the consultant would be aware from the start that there was little prospect of her operation taking place sooner than four or five days after admission. A note made by him on Friday 7 October 2005 referred to the operation about to take place "within a week."

There is little in the hospital notes to indicate much consultation with the family and that is a matter for criticism by Benedict Anthony Clift, consultant orthopaedic surgeon, Ninewells Hospital, Dundee, who prepared a report on his review of the notes and gave evidence to the Inquiry. This confirms the evidence of Mr Grant and Mrs Edwards that they were not kept well informed about Mrs Grant's treatment. Whether the family would have been able to make alternative arrangements if they had been told immediately about the likely delay is by no means certain. Mr Keating indicated that the Royal Infirmary of Edinburgh was the only hospital in the Lothians capable of undertaking hip fracture repair surgery. Hip operations carried out at the the Murrayfield private hospital were elective only. It would appear also that no procedures were in place for transferring patients from one national health area to another, where treatment might have been available sooner. Nevertheless whatever practical difficulties a transfer might have posed, I am of the view that the family were entitled to be fully informed from the outset and at least to have the opportunity of looking into alternatives. It should be noted that no evidence was led as to the availability of an earlier operation elsewhere.

It is generally accepted that delay in operating following a hip fracture is undesirable. The Scottish Government set a standard that by 31 December 2007 98% of all hip fracture patients should be operated upon within 24 "safe operating hours" (that is between the hours of 8am and 8pm) of admission to an orthopaedic unit in Scotland, subject to their being medically fit to be operated upon. Mr Keating was of the view that ideally a hip fracture patient should be operated on within 48 hours of admission. Mr Clift generally operates on such patients within 24 hours of admission, which his unit in Dundee can readily accommodate, and regards 48 hours as the limit.

In his report, Mr Clift reviews studies on the effect of delay on outcome in relation to hip fractures. He refers, at page 8, to a study in 2004 (McGuire), which looked at 18209 patients over the age of 65 years undergoing surgery for a hip fracture and found that there was a 17% higher risk of dying within thirty days of admission among patients who had a delay until surgery of two days or more.

The next study to which Mr Clift refers is an observational study of 2660 patients in 2005 (Moran), which found that there was no difference in mortality at thirty days between those who were operated on promptly and those who were operated on in the first four days after admission. Delay beyond four days did increase mortality, to an unspecified extent.

Finally, Mr Clift refers to a study from 2006 (Bottle & Aylin) of 129522 British patients over the age of 65 admitted with hip fracture requiring surgery, which found that delay in operation is associated with increased mortality.

Mr Keating, in his evidence, referred to the same studies and also to a small study published in the Archives of Gerontology in 2004 which found that a five day wait did not increase the risk of mortality. Mr Clift was cautious about the conclusions of that study because it was based on the observation of only 65 patients. In Scotland, he pointed out, it had long been accepted that delay was an issue hence the government standard.

Mr Clift explained that the development of pulmonary emboli, which in the case of Mrs Grant began the chain of events which led to her death, is associated with lying in

bed and the trauma of the fracture or operation. Both the fracture and the operation cause tissue trauma and blood vessel damage. The process would have started with the formation of clots in the legs and pelvis, from which large clots broke off and went to the lungs. He was of the opinion that if Mrs Grant had been operated on sooner it would have reduced the risk.

It should be noted that patients undergoing hip fracture repair form a vulnerable group and Mr Keating gave a statistic that 30% die within a year, irrespective of how quickly they are operated upon. Mr Clift tended to place more emphasis on the risk to life associated with delay than Mr Keating but the latter was clear that it was undesirable that Mrs Grant, or any other patient, should have to wait as long as five days for surgery. Ideally, the operation should take place within 48 hours. Mr Keating emphasised humanitarian considerations. The period before the operation is one of immobility, pain and possible confusion and agitation and should be kept to a minimum. Mr Clift was equally of the view that the effect on the patient's quality of life was a major reason to avoid delay.

The causes of the delay in this case were examined carefully in evidence. Among the productions lodged with the Inquiry were the operating lists for hip fracture repair in the Royal Infirmary in October 2005. These were discussed with Mr Keating, whose evidence indicated that the unit had the heaviest workload (1000 patients per year) for such cases in Scotland and that the resources, in terms of theatre time and the availability of surgeons were limited. Comparison with other units in Scotland showed that, in 2005 and 2006, Edinburgh lagged behind the others in achieving expeditious performance. Within the last year, however, resources at Edinburgh have been enhanced and the Government target is now being met.

I have already mentioned what theatre capacity was available at the time Mrs Grant was admitted to hospital. Mr Keating was questioned in detail about the operating lists from her admission to the operation. I do not propose to rehearse his evidence in its entirety. As a general rule, patients were operated on chronologically, unless there was a clinical reason to give a particular patient priority. Mrs Grant's age, eighty one, did not afford her priority, eighty one being the average age of patients awaiting hip fracture repair. On 5 October 2005, the age range of patients awaiting surgery in the

unit was from sixteen to ninety six. The logistics were not simple. Some afternoon theatre sessions were not available for hip fracture because of the lack of an attendant radiographer. Some planned operations had a small window for performance. For example, wrist fracture had to be operated on within two weeks. In addition, resources were restricted by the government requirement that elective surgery must be carried out within eighteen weeks. Theatre 21 was shut for mechanical maintenance on 5 October. Against that background, Mr Keating was able to demonstrate that the timing of each operation, including Mrs Grant's, during the relevant period had a sound clinical basis.

Mr Clift was also examined about the operating lists. He expected that finger injuries would be operated on by other services, such as plastic surgeons, and would not have put a wrist fracture patient ahead of a hip fracture patient. However, he did not make any substantial criticism of the approach taken by the Edinburgh orthopaedic trauma unit. He accepted that it was under huge pressure. Mr Clift stated that there was nothing in Mrs Grant's medical notes that would give her priority and that eighty one was about the average age for surgery of this kind.

Mr Keating became lead clinician in the Edinburgh unit in 2001 and represented the unit to the management of the hospital. It was clear that he was very concerned about lack of capacity. In 2004, the trauma unit at St John's hospital was closed and its patients were transferred to Edinburgh, which increased the yearly intake from 850 to 1000. Even before that, Edinburgh was running a pending list. After the transfer, some additional theatre time was made available but it was not enough. Mr Keating had regular meetings with management at which he made a case for increased resources. The first improvement he achieved was the reorganisation of theatre 21 to become a full-time for hip trauma operations, in 2006. Waiting times improved but targets were still not being met. In November 2007, an additional theatre, 19, was brought partly into use with the result that, in the three weeks leading up to the Inquiry, targets were met 100%.

I have nothing more to say about the evidence except to mention for the sake of completeness that, besides the witnesses I have mentioned, consultants from intensive care and the renal unit and a pathologist were called.

In the conduct of the Inquiry, I was greatly assisted by the careful examination of witnesses by Miss Proctor and Mrs Coull and by their helpful closing submissions. Section 6 of the Fatal Accidents and Sudden Deaths Inquiry (Scotland) Act 1976 requires the sheriff to make a Determination having regard to certain considerations. Subsection (c) refers to – "the reasonable precautions, if any, whereby the death… might have been avoided." I am not aware of any judicial interpretation of the expression "reasonable precaution." Examples of failure to take reasonable precautions (in situations very different from this), which come to mind, are the failure to fasten a seatbelt before travelling in a car or the failure to put on a hard hat provided when entering a building site. The implication is that a precautionary measure was available but not taken. In that context, I have considered whether the delay in operating may be described as a failure on the part of the trauma unit to take a reasonable precaution, when it was well known that delay was associated with an increased risk of mortality. In an ideal world, the unit would have been free to make that choice but, in reality, the number of patients and limited resources meant that some delay was unavoidable for all patients, except those who required to be given priority for clinical reasons. Mrs Grant was not in that exceptional category. Accordingly, I have concluded that there is no basis for finding that there was any failure to take reasonable precautions. In coming to that view, I noted that neither Miss Proctor nor Mrs Coull submitted that a finding should be made under this heading.

Subsection (d) refers to – "the defects, if any, in any system of working which contributed to the death…" The system to be looked at in this case includes the resources and procedures for carrying out hip fracture repair operations at the Royal Infirmary of Edinburgh in October 2005. Accepting the evidence of Mr Keating on this point, I am of the view that the procedures used by the unit, described by him, were appropriate. The lack of theatre resources was clearly a defect in the system, however, which resulted in unacceptable delay. While that delay adversely affected Mrs Grant by prolonging immobility with the pain and distress that involved, the question is whether the delay contributed to her death. The studies and the evidence indicate an association between delay and mortality but do not go so far as to make a

causal link. Without such a link, I cannot make a finding under this heading. Again, this accords with the submissions made on behalf of the parties to the Inquiry.

Finally, I do not consider that there are any other facts which are relevant to the circumstances of the death. In particular, Mrs Grant's death was not, on the evidence, related to her fall from the bed, although the fall was no doubt traumatic for her and distressing for her family.

For all these reasons, the Determination contains only formal findings as to where and when Mrs Grant's death took place and the causes of death.