QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

NON-INQUEST FINDINGS

CITATION:	Investigation into the death of Faaee APELU
TITLE OF COURT:	Coroners Court
JURISDICTION:	SOUTHPORT
FILE NO(s):	2012/2673
FINDINGS OF:	James McDougall Coroner
CATCHWORDS:	Coronary angiogram, stent procedure, discharge from Hospital, AHPRA investigation.

REPRESENTATION:

Counsel Assisting:	Ms Rhiannon Helsen, Office of the State Coroner

Mr Faaee Apelu was 41 years of age at the time of his death.

On 26 July 2012, Mr Apelu consulted with his general practitioner, Dr Abdulla Yousef in regard to chest pain, which had been present for around a week. Mr Apelu thought this pain may be connected to his commencement of the medication *Indocid* for gout. Dr Yousef conducted an electrocardiogram ('ECG') which showed changes in the inferior leads. Mr Apelu was noted to be afebrile with normal chest auscultation. His blood pressure was 120/70 and he had a heart rate of 72 beats per minute. Dr Yousef called the Queensland Ambulance Service ('QAS') and arranged for Mr Apelu to be taken to the Robina Hospital for review.

Records from the Robina Hospital indicate that Mr Apelu presented with heavy chest pain that radiated to his throat and back and occurred multiple times a day. It was noted that he had experienced this pain for around a two to three week period. Relevantly, Mr Apelu had a history of high cholesterol, obstructive sleep apnoea, hypertension, varicose veins and obesity. He also had a family history of heart disease, with his brother suffering from a heart attack in his late 40's and an uncle having died of a heart attack when he was in his 50's.

The results of an ECG and blood test for troponin levels were found to be consistent with Mr Apelu having had a non-ST elevation myocardial infarction (acute heart attack). Glyceryl trinitrate infusion was commenced.

On 27 July 2012, Mr Apelu was transferred to the Gold Coast Hospital ('GCH') for a coronary angiogram, which was performed by Dr Ravinder Batra, an interventional Cardiologist. This procedure was reported as showing single vessel disease with a 99% stenosis of the distal right coronary artery. A bare metal stent was subsequently inserted in the artery, which was then dilated with an excellent result. The angiogram report states that the left main coronary artery, the diagonal, the circumflex, the obtuse marginal, the right posterolateral, and the posterior descending artery were all normal. Minor disease was noted at the opening of the left anterior descending artery.

Mr Apelu was discharged from the GCH the following day, and was scheduled to return for an out-patient appointment 3 months later. He was advised to take the following medication:

- Aspirin – 100 mg daily
- Clopidogrel – 75 mg daily for at least 3 months (taken with aspirin this reduces the risk of a thrombosis of the stent, which can lead to a heart attack)
- Artorvastatin – 40 mg daily for high cholesterol
- Coversyl – 2.5 mg daily for high blood pressure

At around 4:00 pm on 31 July 2012, Mr Apelu fell asleep whilst watching television. He began to snore loudly. His 10 year old son who was at the residence visiting became concerned when his Father's breathing became laboured. He sought assistance from workers in a nearby shop who called QAS.

Upon attendance, QAS officers found Mr Apelu to have had a cardiac arrest and commenced resuscitation treatments before transferring him to the GCH.

Despite continued intensive resuscitation measures at the GCH, Mr Apelu was unable to be revived and was declared deceased at 5:19 pm.

Autopsy findings

An external and partial internal post-mortem examination was performed by Pathologist, Dr Dianne Little on 1 August 2012.

The partial internal post-mortem examination conducted found the presence of severe degenerative narrowing of two of the main coronary arteries. A stent had been previously placed in one of the arteries (right) but there was significant narrowing upstream of the stent and also narrowing downstream of the stent. In addition, marked narrowing (approximately 90%) of the left anterior descending coronary artery at its origin from the left main coronary artery, was also observed. Dr Little notes that this coronary atherosclerosis decreased the blood flow to the heart muscle and resulted in an acute myocardial infarction approximately 1-2 weeks prior to Mr Apelu's death. As a result of the infarction, he suffered a cardiac arrest. Mr Apelu was found to be in ventricular fibrillation, a type of arrhythmia, by QAS officers, which is a well described complication of a myocardial infarction.

Dr Little found that the cause of death was the myocardial infarction secondary to coronary atherosclerosis. Dr Little notes that Mr Apelu had a history of hypertension and at autopsy enlargement of the heart was found, which is consistent with this diagnosis. Mr Apelu also had a history of high blood lipids (cholesterol and triglycerides). Both of these conditions are risk factors for coronary atherosclerosis, and therefore would have contributed to the cause of death.

Clinical Forensic Medicine Unit Review

On 9 January 2013, Forensic Medical Officer, Dr Sally Jacobs provided a report after conducting a review of the circumstances surrounding Mr Apelu's death. Specifically, Dr Jacobs was asked to comment upon whether adequate treatment and care was provided and whether there were any further issues, which warranted investigation.

Having considered Mr Apelu's medical records and autopsy findings, Dr Jacobs found the following:

- Mr Apelu had significant risk factors for heart disease.
- In the weeks prior to his death, Mr Apelu had a myocardial infarction, which was the result of severe coronary atherosclerosis.
- Three days prior to his death, Mr Apelu had a percutaneous coronary angiogram, which was reported to show a 99% narrowing in only one

coronary artery. A stent was placed in this artery with reportedly excellent results.

- At autopsy, it was noted that there was severe narrowing of two of the main coronary arteries, namely the proximal anterior left descending artery and upstream and downstream of the right coronary artery, which had been stented.

Dr Jacobs recommended that an expert specialist opinion from a Cardiologist be sought. The issues to be addressed by the expert were identified as follows:

- Was the extent of the coronary artery disease, which was noted at autopsy, visible at the time of the coronary angiography? If so, would this have altered his management?

- If not visible at the time of the coronary angiography, the possible explanations for this.

- Would Mr Apelu's outcome have been changed if the extent of his coronary artery disease had been identified at the time of the coronary angiography?

Family concerns

During the course of the coronial investigation, Mr Apelu's former partner, Ms Maina Schuster raised a number of concerns regarding the care and treatment provided to Mr Apelu by the GCH. She requested that an inquest be convened.

Whilst I do not propose to outline all of the matters raised, Ms Schuster's concerns primarily relate to a perceived lack of monitoring of Mr Apelu's condition by medical officers, following insertion of the stent on 27 August 2012. She is particularly dismayed that he was released the day after the stent was inserted.

Following his discharge from the GCH on 28 August 2012, Mr Apelu stayed with Ms Schuster, as she was concerned that he was not well enough to be on his own. On 30 August 2012, he returned to his residence as he claimed he felt much better. Unfortunately, the following day, their son was forced to seek assistance for his father, who could not be revived.

Ms Schuster is of the view that had Mr Apelu been provided with adequate care following surgery, and not been discharged the following day, he may not have died.

I have considered all of the concerns and matters raised by Ms Schuster during the course of the coronial investigation, when reaching my conclusions regarding Mr Apelu's death.

Australian Health Practitioner Regulation Agency investigation

Ms Schuster subsequently made a complaint to the Health Quality and Complaints Commission ('HQCC') regarding the health service provided by the GCH to Mr Apelu. Ms Schuster alleged that the care and treatment Mr Apelu received was not reasonable, particularly the stenting procedure performed by Dr Batra.

On 17 September 2013, HQCC notified the Australian Health Practitioner Regulation Agency ('AHPRA') of Ms Schuster's complaint. AHPRA, on behalf of the Medical Board of Australia ('the Board'), subsequently carried out an investigation into the adequacy and appropriateness of the clinical care Dr Batra provided to Mr Apelu on 27 July 2012, when performing a coronary angiogram and the stenting procedure.

Specifically, the following two issues were considered:

I. Whether the practitioner, Dr Ravinder Batra, provided appropriate care and treatment to Mr Apelu at the GCH on 27 July 2012, when performing a coronary angiogram and stenting procedure.

II. Whether the practitioner, as a result of the above, inappropriately discharged Mr Apelu on 28 July after his angiogram and stent procedure performed on 27 July 2012.

The Board had not previously received any prior notification about Dr Batra.

On 22 November 2013, the Queensland Medical Interim Notifications Group ('the former Committee') considered a preliminary assessment report and decided to investigate Dr Batra, pursuant to s.160(1) of the *Health Practitioner Regulation National Law* as is in force in Queensland ('the National Law'). In its decision, the former Committee noted that the complaint raised concerns that Dr Batra failed to identify Mr Apelu's coronary artery disease on the angiogram performed. The content of the review conducted by Forensic Medical Officer, Dr Sally Jacobs from the Clinical Forensic Medicine Unit for the purpose of the coronial investigation, was also cited.

During the course of the investigation, Dr Batra provided a number of verbal and written submissions to the HQCC and AHPRA in response to the complaint, during which he stated the following:

- Mr Apelu was admitted to the Robina Hospital and diagnosed with non ST elevation myocardial infarction on 26 July 2012, and was transferred to the GCH for a coronary angiogram and stent procedure on 27 July 2012.

- Mr Apelu's coronary angiogram showed that he had minor ostial LAD disease and a 99% lesion in the distal right coronary artery ('RCA'). Based on this, the RCA was identified as the culprit lesion for the non

ST myocardial infarction, which was in keeping with Mr Apelu's clinical picture.

- Mr Apelu went on to have stenting of his distal RCA in the same sitting, the procedure was uncomplicated and he had 'an excellent angiographic result'.

- There were no other significant lesions identified on the angiography, and none of the other narrowing or blockages mentioned in the autopsy report were visible on the angiogram.

- Mr Apelu's stay overnight in the GCH was uneventful.

- The doctor on duty for the weekend examined Mr Apelu on 28 July 2012, found him to be doing well and clinically stable, and decided to discharge him on appropriate medications as per hospital protocol.

- The case was subsequently presented in multiple academic forums in the presence of Pathologist Dr Dianne Little, and it was concluded that Mr Apelu had suffered a Sudden Cardiac Death 'because of cardiac arrhythmia rather than any complication of stenting or untreated blockages'.

- Dr Batra stated that he had discussed the matter with Pathologist, Dr Little who had agreed that Mr Apelu's death was a result of ventricular arrhythmia arising from the scar of a myocardial infarction he suffered approximately three weeks before his death. Dr Little felt that the stenting procedure performed on Mr Apelu was not related to his death.

- Since Mr Apelu's death, Dr Batra has repeatedly reviewed the angiogram and is confident in stating that none of the extra lesions mentioned in the autopsy report were visible. There has been discrepancies in autopsy findings and angiographic findings reported in the literature.

- Patient flow processes between Robina and the GCH are structured in such a way that the intervention cardiologist is not involved.

- Mr Apelu's angiogram was performed by a registrar under Dr Batra's supervision. Dr Batra was not involved in Mr Apelu's initial diagnosis or clinical treatment.

- After the RCA had been stented, on angiogram the stented segment appeared matched to normal segment with no residual stenosis and TIMI grade 3 flow, which was an excellent result. Dr Batra believed that Mr Apelu had been appropriately and effectively revascularised and was pain free, and found no new ECG changes.

- After the stenting procedure, Mr Apelu was transferred back to the ward under the care of the managing cardiologist, and Dr Batra was not involved in his post stent care.

- Dr Batra has performed coronary angiograms and stenting as a cardiologist at the Gold Coast Hospital since 2006. During this time, Dr Batra has performed 2100 angiograms and 1160 angiograms plus stenting procedures.

Expert opinion of Cardiologist, Professor Darren Walters

During the course of the investigation, AHPRA obtained the independent expert opinion of interventional Cardiologist, Professor Darren Walters. Professor Walters is the Director of Cardiology at the Prince Charles Hospital, and was acting as the Executive Director at the time his advice was sought.

Professor Walters was asked to comment on whether Dr Batra's knowledge, skill or judgment possessed, or care exercised by him, whilst providing medical services to Mr Apelu, was below the standard reasonably expected of a health practitioner of an equivalent level of training or experience.

After reviewing the circumstances surrounding Mr Apelu's death and the matters cited in Ms Schuster's complaint, Professor Walters found as follows:

- In general, Mr Apelu received an appropriate and timely management strategy.

- The diagnosis of acute coronary syndrome was made promptly, and indicated medical therapy instituted, including antiplatelet therapy and anticoagulation.

- An early invasive strategy based on Mr Apelu's risk profile and positive biomarkers was undertaken.

- A number of 'significant points for consideration' were noted, in relation to the evaluation and treatment of Mr Apelu, including:

    - The ECG suggested an ST elevation myocardial infarction rather than a non ST elevation myocardial infarction, and had the diagnosis of ST elevation been recognised it may have influenced the decision to discharge Mr Apelu on 28 July 2012.

    - However, even if ST elevation had been recognised, if Mr Apelu had remained stable in hospital, he 'would likely have been discharged on or prior to 31 July 2012'.

    - The angiography performed on Mr Apelu was of suboptimal quality due to suboptimal opacification of the coronary arteries and streaming artefact, and this may have impacted on the ability of the operator to detect the significant coronary stenosis

found at autopsy by the pathologist. Other investigations, such as intravascular ultrasound or fractional flow reserve assessment, were not performed in this case and are not commonly performed in Australia.

- Based on the angiography recorded, lesions of the severity found subsequently at autopsy were not demonstrated during Dr Batra's investigation and treatment of Mr Apelu.

- Such deficiencies are 'well known' and need not necessarily reflect adversely on the competence of the operator.

- The stenosis are unlikely to have developed de novo during the period between angiography and autopsy.

- Beta blockers, which are known to reduce the risk of death following AMI and particularly the risk of arrhythmias, were omitted from the discharge medications. Abrupt cessation of beta blockers is known to be associated with adverse events, although the dose in this case was small.

- Investigations, which are often performed routinely after intervention to quantify the extent of any peri procedural myocardial injury, including post procedural troponin and CK, were not carried in this matter.

- The likely cause of Mr Apelu's death was a primary cardiac arrhythmia, the substrate being recent acute myocardial infarction and/or critical coronary ischemia due to incomplete revascularisation.

- There were multiple factors that may have predisposed Mr Apelu to cardiac death, and the early discharge was not the key factor in his death.

- Dr Batra's overall conduct was not, on the information provided, 'of standard that would suggest gross variance from a peer or equivalent training and experience'.

Following receipt of Professor Walter's report, Dr Batra was invited to provide further submissions in response. Dr Batra noted the following:

- He generally agreed with Professor Walter's opinion.

- He agreed with Professor Walter's view that even if the subtle ST elevation had been recognised, Mr Apelu would have been discharged on 29 or 30 July 2012, as patients of ST elevation myocardial infarction are usually discharged on day 4 if stable.

- In relation to Professor Walter's statement that Mr Apelu should have been prescribed beta blockers on discharge, Dr Batra noted that he

believed Mr Apelu was prescribed Metoprolol on discharge, and that its omission on the discharge summary was an error.

- Post procedure measurement of CK and troponin is not a routine practice at the hospital, due to literature indicating that this approach is not useful.

- After Dr Batra stented the right coronary artery, on angiogram the stented segment appeared matched to normal segment with no residual stenosis and TIMI grade 3 flow, which was an excellent result.

- Dr Batra agreed that the angiogram pictures of the left coronary system were suboptimal due to streaming, however, no critical lesions were identified in the left system and the right coronary artery was seen to fill retrogradely.

- The angiographic pictures of the right coronary artery did not show any streaming and clearly ide notified the culprit right coronary lesion, and the pictures of the left coronary system were therefore not repeated.

- There are several well documented reasons for discrepancies between angiographic and autopsy findings in the literature, including:

    - Angiogram is a two dimensional picture of an artery, which is a three dimensional structure.

    - Autopsy has the limitation that there is no distension pressure in the vessel and they can appear smaller in diameter.

Based upon the information obtained during the course of the investigation, the Queensland Notifications Committee of the Medical Board of Australia ('the Committee') found that there was sufficient evidence to form a reasonable belief that Dr Batra's performance did not amount to unsatisfactory professional performance as defined in the National Law.

Further information from Pathologist Dr Little

Following receipt of AHPRA's final investigation report, further information was sought from Pathologist, Dr Dianne Little as to the submissions made by Dr Batra, as well as Professor Walters' findings.

Dr Little expressed the view that the myocardial infarction suffered by Mr Apelu occurred well before he was admitted to the Robina Hospital for the purpose of an initial review, following which the stenting procedure was undertaken. Furthermore, she confirmed that arrhythmias are well documented complications of a myocardial infarction, and it appears that Mr Apelu died as a result of an arrhythmia. Dr Little noted that it was difficult to quantify the contribution, if any, the untreated blockages had on Mr Apelu's death. However,

at autopsy there were no direct complications arising from the stenting procedure performed, such as a ruptured coronary artery or thrombosis.

Conclusion

Mr Apelu was 41 years of age when he died as a result of a myocardial infarction.

It is evident from the medical evidence obtained during the course of the coronial investigation that Mr Apelu had a number of significant risk factors for heart disease. Unfortunately, the angiographic findings in this case did not reflect the true extent of the degenerative narrowing in both of Mr Apelu's coronary arteries. Whilst the right coronary artery was stented, at autopsy it was found that there was severe narrowing in two of the main arteries, including upstream and downstream from the stent. I accept that there are limitations to what is detectable from the angiography currently able to be performed, which can lead to discrepancies with findings at autopsy, as was the case here. These deficiencies are well known.

Whilst it is difficult to quantify the contribution, if any, the untreated blockages had on Mr Apelu's death, there is no evidence to suggest that any complications were suffered as a direct result of the stenting procedure.

I am satisfied that the clinical treatment and diagnosis made by staff at the Robina Hospital and the GCH was done so promptly, and appropriate invasive measures were undertaken. Whilst Mr Apelu's discharge from the GCH the day after his stenting procedure may have been somewhat premature, this was not a significant factor in his death. Overall, it seems that the clinical care and treatment Mr Apelu was provided by the Robina Hospital and GCH was appropriate.

I am satisfied that the concerns raised by Ms Schuster have been adequately addressed during the course of the coronial investigation, and through the thorough investigation conducted by AHPRA into her complaint. Accordingly, I find that there are no further issues, which warrant investigation. I propose to close the coronial investigation without proceeding to inquest.

James McDougall
South Eastern Coroner
3 July 2015