



FINDING OF INQUEST

An Inquest taken on behalf of our Sovereign Lady the Queen at Adelaide in the State of South Australia, on the 17th, 18th and 19th days of August 2015 and the 11th day of April 2016, by the Coroner's Court of the said State, constituted of Mark Frederick Johns, State Coroner, into the death of Roswitha Maria Osang.

The said Court finds that Roswitha Maria Osang aged 66 years, late of 44 Murray Road, Croydon, Victoria died at the Tanunda Hospital, 15 Mill Street, Tanunda, South Australia on the 1st day of October 2013 as a result of cardiac failure due to atherosclerotic and hypertensive heart disease. The said Court finds that the circumstances of her death were as follows:

1. Introduction and cause of death

- 1.1. Roswitha Maria Osang died on 1 October 2013. An autopsy was performed by Dr Wills of Forensic Science South Australia. Dr Wills' report¹ gave the cause of death as cardiac failure due to atherosclerotic and hypertensive heart disease, and I so find.

2. Background

- 2.1. In the days preceding her death Mrs Osang and her husband were travelling in country South Australia. They were from Melbourne and had been away for less than a week. Mr Osang gave evidence at the Inquest that his wife was in good health prior to leaving Melbourne. He said that she had a slight snuffle, but nothing else and that she had experienced hip pain in the past. She had mentioned to him that she had been experiencing an irregular heartbeat, but she had not spoken to a doctor about this. On

¹ Exhibit C1a

the trip to Adelaide Mrs Osang developed a cough which Mr Osang described as quite strong. However, it seemed to settle down and they continued their journey with the intention of travelling to Ceduna. They had crossed Spencer Gulf by ferry and when they arrived in Wallaroo Mrs Osang was complaining of having swollen ankles. This was something that she had never experienced before. Having completed the ferry journey Mrs Osang was feeling comfortable, but the couple decided to retrace their steps to where medical services might be available if she did not get better.

- 2.2. They drove through Port Augusta and Mrs Osang was feeling reasonably well apart from her swollen ankles. The couple decided to stay at the caravan park in Nuriootpa where they had stayed previously. They stayed in their van for one night and then by the morning of 30 September 2013 Mrs Osang was having difficulty walking due to her swollen ankles, although her cough was improving. They decided to consult a general practitioner at the Tanunda Medical Centre. Mr Osang said that his wife went into the doctor's office while he waited in the reception area. He said that his wife was with the doctor for quite some time and when she came out she seemed to be fairly happy with the consultation. She had said that it had taken a long time to get her history and that she had been given some prescriptions for medication and had been asked to come back to get some blood results that the doctor had ordered. Mrs Osang told her husband that she had had an echocardiogram.
- 2.3. Mr Osang said that they went to a pharmacy and obtained the medication and that his wife started the medication that afternoon. They returned to the doctor's surgery for his wife's blood results. His wife went into the office and when she came out she told him that it was fine for them to continue travelling on their journey. They returned to the caravan park, but because Mrs Osang had been placed on diuretic medication by the doctor, they decided to move into a cabin so she would be more comfortable. Over the night of 30 September 2013 she had to visit the toilet regularly, but otherwise seemed to be alright. In the morning Mrs Osang said that she felt a bit weak and decided to stay in bed. Mr Osang said that she had taken her medication as directed by the general practitioner. Mr Osang was aware at the time of giving his evidence that one of the medications prescribed by the doctor was a drug known as Sotalol. He said that his wife had taken four half tablets of Sotalol, as directed, by shortly after lunch on 1 October 2013 - two on the previous afternoon and two that

day. She had also been taking the diuretic medication as directed². Mr Osang said that his wife watched television in bed and then she had her lunch. Shortly after this she started to feel sick and said that she was 'really bad'. Mr Osang called the general practitioner's rooms to obtain the next available appointment which was to be 1 to 1½ hours later. By this time his wife was vomiting and they took a bucket and towels with them to the medical centre. By the time they arrived his wife could not walk in and a wheelchair was used to get her into the medical centre. Mr Osang described how during the late afternoon she was transferred to the local hospital and that arrangements were made for her to be evacuated to Adelaide, but that his wife died shortly after the arrival of the MedSTAR team.

3. The evidence of Dr Urlwin

- 3.1. Dr Urlwin was the general practitioner who treated Mrs Osang. He commenced his general practice in Tanunda in 1980 and, in September 2013, the practice of which he was a part had ten doctors. The practice also had a medical student gaining work experience. Dr Urlwin said that his practice encouraged the students to see patients, take histories and develop management plans. The students would present the case to Dr Urlwin or one of his colleagues, describe their history taking and examination findings and diagnosis and management plans. This would be done in the presence of the patient who could interrupt if the student was not correct in some respect. The doctors at the practice would also examine the key findings of the student.
- 3.2. Dr Urlwin was asked about expert reports obtained in this case. One from the intensivist, Professor Cade, and the other from cardiologist, Dr Mahar. Both of them had commented that he appeared not to include in his differential diagnosis of Mrs Osang, serious cardiac failure. He explained that he had considered it, but not arrived at it. In his very candid and sincere account of the events surrounding his dealings with Mrs Osang, he said that he regretted very much that he had not arrived at that diagnosis. He said that he wished that he had picked it up and seen some of the clues that must have been there. He said he regretted the loss of Mrs Osang and wished that he had made different decisions. He accepted that things might have been different if he had done so. It is to Dr Urlwin's credit that he expressed these sentiments.

² Transcript, page 21

- 3.3. This is not a case where it would be appropriate to be critical of Dr Urlwin. This case does however provide an opportunity to consider the difficulties confronted by general practitioners, particularly in the country, who are confronted with patients who are travelling through, and who present with symptoms similar to those of Mrs Osang, and affords an opportunity to discuss the use of the medication Sotalol in this context.

4. Dr Urlwin's examination of Mrs Osang

- 4.1. Dr Urlwin said that at the time he saw Mrs Osang he had the assistance of a medical student who he regarded very highly. She had previously been a nurse and so had a good base of knowledge. Dr Urlwin explained that prior to him seeing Mrs Osang, the student took her history in a different treatment room while Dr Urlwin completed his consultation with the previous patient. Dr Urlwin explained that the medical student would open a file using his computer login. The history taken by the medical student noted that Mrs Osang was travelling from interstate. Dr Urlwin commented that he sees such patients from time to time and is aware that their follow-up might not be able to be done locally, and that it is sometimes necessary to pass instructions through the patient to another doctor.
- 4.2. Dr Urlwin recalled Mrs Osang and thought that she looked 'okay' and not particularly unwell on 30 September 2013.
- 4.3. She reported swelling of ankles for the preceding six days and that the swelling improved overnight. Dr Urlwin commented that this could have many causes, including sitting in a car for long periods, or that it could have a cardiac cause. The fact that it improved overnight in his mind lent support to the notion that it was likely to be a result of sitting in the car with the legs hanging down from the seat, and not a cardiac failure which he said was more persistent. Mrs Osang also said that she was feeling cardiac palpitations for the last month. Dr Urlwin said he recalled particularly checking that aspect with Mrs Osang when she was presented by the student. She described the palpitations as irregular and intermittent, that they would come and go. Dr Urlwin thought that this brought up the possibility of an arrhythmia, which he described as an irregular heart beat due to abnormal electrical activity, which makes the pumping effect of the heart less efficient. He said that this can lead to an accumulation of fluid, or what he described as mild heart failure, in contrast he said to

the serious heart failure referred to by the experts Professor Cade and Dr Mahar. Dr Urlwin explained the process by which if the heart is not pumping efficiently, increased pressure on the right side of the heart can lead to fluid being pushed out of the blood system into surrounding tissues.

- 4.4. He noted that Mrs Osang's blood pressure was normal and her pulse was irregular. He regarded the palpitations as being connected with arrhythmia. Mrs Osang had reported reduced urine output which Dr Urlwin regarded as consistent with reduced pumping efficiency of the heart due to an arrhythmia. The persistent unproductive cough over the previous four days he regarded as being consistent with an upper respiratory tract infection that developed approximately six days before. He acknowledged that the cough could also be a cardiac symptom, but said that usually in severe cardiac failure it was associated with breathlessness, including when lying flat. He said that he questioned Mrs Osang about that and she did not report any orthopnea, or paroxysmal nocturnal dyspnoea. He said that the lack of breathlessness was an indicator to him that there was no left heart failure to any significant degree. He noted that Mrs Osang's history included high cholesterol and heart conditions in both her mother and father which he acknowledged were risk factors for heart disease.
- 4.5. Dr Urlwin said that he examined Mrs Osang himself. He asked her to go into an examination room and remove her shirt and he examined her chest with the (female) medical student present. He said he would have apologised to Mrs Osang for having her undress twice (she had previously been examined by the medical student). He said he was looking for heart failure in the situation of swollen ankles and that this was a critical thing to do. He was looking for signs of fluid in the lungs by checking for crepitations. He said it was his routine practice to look for pleural effusions. He listened to heart sounds for the presence or otherwise of valvular heart disease. He checked for swelling around the liver and the veins in the neck. He carried out a standard examination and did not see any abnormality. His conclusion was that he was not dealing with severe heart failure.
- 4.6. Dr Urlwin said that this left him with an irregular pulse and he thought this was attributable to an arrhythmia. He did not regard the case as being urgent. It was his thinking that Mrs Osang needed further investigation soon, but not immediately. He had an ECG carried out to see if he could document the arrhythmia. In addition he

ordered blood tests including troponin levels. He also ordered other tests including a biochemical screen of the blood including kidney function.

- 4.7. Dr Urlwin also noted that there was pitting oedema of Mrs Osang's ankles.
- 4.8. Dr Urlwin said that the troponin results came in at 2:30pm that afternoon (he had seen Mrs Osang in the morning). The blood chemistry results came in at 3:45pm. The troponin level was normal. The ECG result showed atrial ectopics and non-specific ST-T changes. The blood chemistry results were unremarkable apart from those relating to liver function, which Dr Urlwin noted to be mildly to moderately abnormal. Dr Urlwin acknowledged that in hindsight the liver function abnormalities were consistent with heart failure, but said that he did not reach that conclusion at the time. He considered that the liver function results required further investigation and he said that he advised Mrs Osang accordingly.
- 4.9. Having received those test results he concluded that his previous advice to Mrs Osang stood. He believed the ECG was abnormal and Dr Urlwin thought it suggestive of atrial fibrillation causing atrial arrhythmia as he described it.
- 4.10. Dr Urlwin knew that Mrs Osang was going back to Melbourne in the near future. He thought that she should continue, but that it was important that she see her doctor soon. He said that she had confidence in her family general practitioner in Melbourne and he remembered discussing with her whether she should go to a hospital when she got back to Melbourne, but she thought that she would be best directed into the system by her general practitioner³. Dr Urlwin said that he prescribed two medications. Firstly, Frusemide to remove the excess fluid build-up and, secondly, because he thought she had an atrial type of arrhythmia, probably atrial fibrillation, that she should go on an antiarrhythmic drug called Sotalol.
- 4.11. Dr Urlwin said that he attributed the ST-T changes in the ECG to possibly being an early sign of coronary artery disease which he said sometimes shows itself as a rhythm disorder in the early stages. That is why he thought it appropriate for Mrs Osang to be reviewed by her local general practitioner. He said that on careful consideration he thought it was reasonable for her to return to Melbourne having considered the ECG and the blood test results. Dr Urlwin acknowledged that in

³ Transcript, page 69

hindsight the oedema in the ankles had a cardiac cause which he attributed to atrial fibrillation or an arrhythmia, but in fact there was a serious heart failure underway. Dr Urlwin said that he thought that Mrs Osang looked quite well on 30 September 2013 and that there was a benign explanation for her ankles swelling. He said they did canvas the possibility of her interrupting her trip and going to the Lyell McEwin Hospital, but he thought that she was safe to travel back to Melbourne.

5. Dr Urlwin's evidence about 1 October 2013

- 5.1. Dr Urlwin said that his surgery notes showed that Mrs Osang was brought in by her husband at around 3:30pm on 1 October 2013. The computerised medical record⁴ was opened at 3:40pm. Mrs Osang was first seen by an experienced nurse in the treatment room of Dr Urlwin's clinic. The nurse recorded a blood pressure at $60/40$, a pulse at 56 and thready, temperature at 36.1° and oxygen saturation of 67%. When Mrs Osang first arrived Dr Urlwin was with another patient and, while finishing with that patient, he ordered an injection of Maxalon to help with Mrs Osang's vomiting, finalised his patient and cleared the next few patients so that he could attend to Mrs Osang.
- 5.2. An ECG was recorded at 3:45pm. Dr Urlwin said that the second ECG showed differences to the first and that there were indications of ischaemia, but he said he still did not have a clear diagnosis of what was going on. Dr Urlwin said that his first step was to deal with Mrs Osang's vomiting and he was looking for a response to the administration of Maxalon. He said she was slow to respond and her blood pressure remained low. He said that at that stage he thought he should give her fluids to increase her blood pressure which is standard resuscitation practice⁵. He said that this strategy did not assist. He said that they managed to get intravenous lines in but there was no response. He said that his first phase of treatment was Maxalon to stop the vomiting and the next phase was to assist her blood pressure by the administration of fluids. Dr Urlwin said that when he realised that she would not recover sufficiently for road transport he decided that it would be necessary to have an emergency retrieval team from the Royal Adelaide Hospital attend. In the meantime he thought he should take Mrs Osang to the Tanunda Hospital to stabilise her for retrieval. Dr Urlwin said that he made two calls to MedSTAR. In the first call the retrieval team recommended that he treat her with adrenalin. He said that when that was not

⁴ Exhibit C6

⁵ Transcript, page 91

working he sought further advice and that advice was to increase the adrenalin. At some point Dr Urlwin was joined by a second general practitioner, Dr Myatt, who assisted. A second intravenous access was obtained and Mrs Osang was moved into the Tanunda Hospital next door to the clinic. The Tanunda Hospital notes⁶ recorded that Mrs Osang arrived at 5pm⁷. He said that the time between when he first started dealing with Mrs Osang at approximately 3:45pm and 5pm was occupied by the things that he had to achieve, which included ringing MedSTAR, catheterisation and organising the adrenalin infusion that was recommended by the MedSTAR team.

- 5.3. According to Dr Urlwin when he first realised the seriousness of Mrs Osang's condition soon after 3:45pm, he was considering whether she had a pulmonary embolism or a sepsis, or whether it was a cardiogenic shock. He had also noted the possibility that Sotalol might have been an aggravating factor. He said that he did not at that time think Sotalol was the full cause of the problem, but he was aware that it works against adrenalin and that part of the body's response in a critical situation is to release adrenalin and that Sotalol would inhibit the effect of the body's natural response.
- 5.4. MedSTAR arrived at 6:44pm, by which time Dr Urlwin was administering chest compressions. On arrival MedSTAR took over the resuscitation attempts⁸.

6. The evidence of the experts

6.1. Dr Leo Mahar, Cardiologist

Dr Mahar is a cardiologist with 35 years of practice in that specialty. He provided a report⁹ and gave oral evidence. He expressed the opinion that the symptoms of ankle swelling and an unproductive cough may have a number of explanations. Dr Mahar thought that the possible explanations for these symptoms widened the differential diagnosis and that this was not a straight forward case¹⁰. Dr Mahar was of the opinion that it would be unduly harsh to suggest that Dr Urlwin ought to have ascribed the ankle swelling to be a clear case of cardiac failure¹¹. Dr Mahar was asked whether it is inappropriate to prescribe Sotalol in a situation where a general practitioner believes a patient has mild heart failure and knows that the condition is at that point

⁶ Exhibit C4

⁷ Transcript, page 95

⁸ Transcript, pages 102-103

⁹ Exhibit C9

¹⁰ Transcript, page 164

¹¹ Transcript, page 166

uncontrolled and untreated. Dr Mahar responded by saying that it is customary to diurese the patient first to get rid of the excess fluid and then introduce a beta blocker such as Sotalol at a later stage to deal with the arrhythmia¹². In hindsight, Dr Mahar saw the introduction of Sotalol by Dr Urlwin as being unwise. Dr Mahar said that his interpretation of Dr Urlwin's notes was that Dr Urlwin thought that the mild heart failure was caused by rapid atrial fibrillation and he was going to treat the heart failure and the rapid atrial fibrillation at the same time. Dr Mahar's view is that it is better to deal first with the heart failure before introducing the beta blocker. Dr Mahar first said that when Mrs Osang re-presented the following day in a shocked state he thought that it was because the beta blockers¹³ in addition to the heart failure, which was at that stage not adequately treated, had 'probably caused this'. He then acknowledged that it would be better to express the role of the Sotalol as an aggravating factor¹⁴.

- 6.2. Dr Mahar noted that after Mrs Osang re-presented the following day in a shocked state Dr Urlwin responded initially by fluid resuscitation. He said that this was understandable in the situation confronting Dr Urlwin in view of Mrs Osang's very low blood pressure¹⁵.
- 6.3. Dr Mahar was asked about the biochemical results reported on the day before Mrs Osang's death, and in particular the liver assays. He commented that in his opinion they were mildly deranged and that Dr Urlwin's understanding that Mrs Osang had been taking statin medication for sometime was a possible explanation¹⁶.

6.4. Professor Jack Cade

Professor Cade is Principal Specialist in Intensive Care at the Royal Melbourne Hospital and a Professorial Fellow in the University of Melbourne. Professor Cade's view is best summarised in the following passage of his evidence:

'Well the patient's particular presenting symptom included as one of the dominant features, oedema of both ankles. Taken in context, oedema of the ankles has a number of causes, but taken in this context, this is now an older patient who is as I have listed in my report¹⁷, has had palpitations, a cough, ankle oedema, a previous history of

¹² Transcript, page 166

¹³ The Sotalol

¹⁴ Transcript, page 167

¹⁵ Transcript, page 173

¹⁶ Transcript, page 176

¹⁷ Exhibit C10

hyperlipidaemia, family history of heart disease and an abnormal ECG. The causes of the ankle swelling have to be cardiac failure until proven otherwise.'¹⁸

Professor Cade acknowledged that there are other causes of ankle oedema, but that in his opinion cardiac failure had to be excluded in this context. Professor Cade referred to the blood tests that were taken on the Saturday. It was his opinion that the liver assays showed 'very marked abnormality'¹⁹. It is to be noted that this was in contrast to both Drs Urlwin and Mahar, the latter of whom used the words mildly deranged. The pathologist in the autopsy report described them as mildly abnormal. In the end, Professor Cade acknowledged that there is room for some subjectivity associated with the label one applies to the degree of derangement²⁰. In any event, Professor Cade believed that the abnormal liver assays should have prompted a rethink of the original diagnosis²¹.

- 6.5. Professor Cade said that Dr Urlwin quite rightly suspected that Mrs Osang might have an arrhythmia because she had reported palpitations and he felt an irregular pulse. Professor Cade commented that the ECG ordered by Dr Urlwin showed a normal sinus rhythm with an occasional atrial ectopic beat. He thought the ECG excluded an arrhythmia at the time.
- 6.6. Professor Cade said that he agreed with Dr Mahar that the prescription of Sotalol was unwise in this setting. He noted that Sotalol is a very popular frontline antiarrhythmic drug and part of the broad beta blocker group. It was his opinion that Sotalol should never be used in untreated cardiac failure because it can exacerbate that condition, a proposition which is consistent with the evidence of Dr Mahar.
- 6.7. Professor Cade noted that Sotalol has an immediate effect and that is why it has to be given in general twice per day because it has a relatively short half life²². Dr Mahar summarised the position as follows:

'Firstly, there's got to be an indication and secondly, there shouldn't be a contraindication. In other words, the benefit/risk ratio should be favourable. So, it's inappropriate to prescribe a potent drug if the indication isn't there and it's doubly inappropriate if there is a contraindication present.'²³

¹⁸ Transcript, page 187

¹⁹ Transcript, page 188

²⁰ Transcript, page 227

²¹ Transcript, page 227

²² Transcript, page 189

²³ Transcript, page 191

- 6.8. Professor Cade said that in retrospect, on 1 October 2013 when Mrs Osang re-presented to Dr Urlwin, she should not have been given fluids, but he acknowledged that this decision depended on a correct diagnosis being made and he acknowledged that fluids are the number one choice of therapy in resuscitation.
- 6.9. It was Professor Cade's opinion that it would be highly unlikely that Mrs Osang would have died if she had not been given Sotalol, and therefore her death was preventable²⁴. He would have agreed with the approach of prescribing Frusemide to diurese Mrs Osang and allow her to go back home on the Frusemide to contact her general practitioner and obtain appropriate advice about the need or otherwise to commence an antiarrhythmic after she had been 'dried out'²⁵.
- 6.10. Professor Cade agreed with Dr Mahar's description of the use of Sotalol as aggravating, but not causing Mrs Osang's death. He repeated that he believed it would be highly unlikely that she would have died, absent the prescription of Sotalol, but conceded that he could not be absolutely sure about that²⁶.

7. **Conclusions**

- 7.1. I formed the view listening to Dr Urlwin that he presented as a sincere, caring doctor and there is no doubt that he was very diligent in his approach. I do not have any doubt that everything he did, he did out of a desire to do good and to provide the best possible treatment for Mrs Osang. Dr Urlwin through his counsel conceded that he missed the severity of Mrs Osang's heart failure and he accepted that he commenced Sotalol with an inadequate basis. However, he thought that he was treating a cardiac failure which was at a mild level and which was exhibiting episodes of atrial fibrillation with arrhythmia. He thought that with diuretics it was appropriate to commence the Sotalol and send Mrs Osang back to Melbourne the following day for review. He accepted that the abnormal liver function tests provided an opportunity for reappraisal.
- 7.2. Dr Urlwin conceded these mistakes, but it is quite clear that in the context of the rural setting and the transient patient he was dealing with, the mistakes were understandable. Dr Urlwin is a country general practitioner with many patients and a

²⁴ Transcript, page 214

²⁵ Transcript, page 214

²⁶ Transcript, page 230

heavy patient load with the pressures that country practice brings. He has been in country practice continuously for 30 years which on any view is a noble and admirable achievement.

- 7.3. In my opinion this case offers an opportunity for the Cardiac Society of Australia and New Zealand, in conjunction with the Royal Australian College of General Practitioners, to consider whether it is necessary to alert the general practice community to the risks involved in the prescription of Sotalol in untreated heart failure and I propose to recommend accordingly.

8. Recommendations

- 8.1. Pursuant to Section 25(2) of the Coroners Act 2003 the Court is empowered to make recommendations that in the opinion of the Court might prevent, or reduce the likelihood of, a recurrence of an event similar to the event that was the subject of the Inquest.
- 8.2. I recommend that the Cardiac Society of Australia and New Zealand, in conjunction with the Royal Australian College of General Practitioners, consider whether it is necessary to alert the general practice community to the risks involved in the prescription of Sotalol in untreated heart failure.

Key Words: Cardiac Failure; Country Areas - Medical Services; Sotalol

In witness whereof the said Coroner has hereunto set and subscribed his hand and

Seal the 11th day of April, 2016.

State Coroner