

REPORT TO THE ATTORNEY GENERAL

PUBLIC INQUIRY

THE FATALITY INQUIRIES ACT

CANADA  
PROVINCE OF ALBERTA

A Public Inquiry into the death of Jennifer Axelson, 15 years of age [REDACTED] [REDACTED] of 13 Spring Haven Close, Airdrie, Alberta was held at the Provincial Court Building, 323 - 6th Avenue, North East in the City of Calgary before Manfred Delong, a Provincial Court Judge. A jury was not summoned.

The Inquiry was held on June 2, 3 and 26, 1992 and the following findings were made:

1. Date and Time of Death: December 24, 1991 at approximately 8:39 A.M.
2. Place: Calgary General Hospital, Peter Lougheed Centre (the "Hospital").
3. Medical Cause of Death: Septicemia with disseminated intravascular coagulation due to or as a consequence of infection with Neisseria Meningitidis, Type C.
4. Manner of Death: Natural.
5. Circumstances Under Which Death Occurred:

Jennifer Axelson died after having been released from the Hospital the night before. At the Hospital she had received medical treatment for what was thought to be symptoms of influenza. In fact, her condition was more serious and she died less than 23 hours after she first complained of being ill and less than 12 hours after being released from the Hospital.

5.1 December 23 and 24, 1991

On December 23, 1991, at approximately 10:00 A.M., Jennifer Axelson complained to her mother, Yvonne O'Brien, that she was experiencing a severe headache, stiffness of her neck and nausea. Ms. Axelson's attempts to deal with this condition by lying down were unsuccessful. At 2:30 P.M., her condition had not changed and she was taken by Ms. O'Brien to Ms. Axelson's physician, Dr. Allatif Raghavji.

On her arrival at the doctor's office, Ms. Axelson was given an Extra Strength Tylenol pill by a nurse due to Ms. Axelson's

continued complaint of having a severe headache.

Dr. Raghavji examined her and advised her she should attend the Hospital for further examination and testing by the emergency physicians. He provided Ms. Axelson with a letter introducing her and stating the reason for her attendance at the Hospital's Emergency Ward.

Ms. O'Brien immediately drove her daughter to the Hospital's Emergency Ward, arriving there at 4:30 or 5:00 P.M. Ms. Axelson was seen by Matthew Ginzer who was, at that time, a clinical clerk or senior medical student involved in a practicum in his third and final year at the Faculty of Medicine of the University of Calgary. (Dr. Ginzer is now interning at the Royal Alexander Hospital in Edmonton, Alberta.) In addition, Dr. Donald MacLachlan, an emergency physician, examined Ms. Axelson and discussed the case with Dr. Ginzer. A blood test was ordered and when the results did not indicate anything out of the ordinary, Ms. Axelson was given a Tylenol 3 pill to deal with her heightened temperature and she was released from the Hospital.

Ms. Axelson left the Hospital at approximately 9:30 P.M. after her temperature had lowered and she arrived home at 11:30 P.M. after a stop at her aunt's home. On December 24, 1991 at approximately 4:00 A.M., Ms. O'Brien attended on Ms. Axelson who was in her bed moaning, vomiting and running a fever. Ms. Axelson collapsed in the living room during the efforts of her mother to return her to the Hospital. Emergency paramedics responded to the 911 emergency telephone call and transported her to the Hospital. However, their efforts and those of the medical staff at the Hospital were unsuccessful. Jennifer Axelson died at approximately 8:39 A.M., less than 23 hours after she had complained of not feeling well.

## 6. Cause of Death

### 6.1. Meningitis

Meningitis is an inflammation by infection of the meninges which is the membrane covering the brain and spinal cord.

That Ms. Axelson might have been suffering from meningitis was on the minds of all the medical professionals who attended on her before her death. After her death, the possibility that she may have died of meningitis was investigated. During this Inquiry, meningitis as a possible cause of death was thoroughly canvassed with all the medically trained witnesses.

Based on the medical evidence summarized below, I find that

meningitis was not a cause of Jennifer Axelson's death.

#### **6.1.1 Dr. Allatif Raghavji**

Dr. Raghavji had been Ms. Axelson's family physician since September, 1988. On December 23, 1991, he examined Ms. Axelson when she attended with her mother at his office in Airdrie. He conducted a number of tests but he did not arrive at a fixed diagnosis. Dr. Raghavji conducted a number of tests and determined that her central nervous system was normal on examination. However, he considered that meningitis was still a possible diagnosis due to Ms. Axelson's complaint of a headache, nausea and some restriction in the movement of her neck muscles. Dr. Raghavji gave Ms. Axelson a letter and instructed her to go to the Hospital as soon as possible.

#### **6.1.2 Dr. Donald MacLachlan**

Dr. MacLachlan was the emergency physician in attendance at the Hospital on December 23, 1991 when Ms. Axelson arrived with her mother. He was the supervising physician for the clinical clerk, Matthew Ginzer. Mr. Ginzer and Dr. MacLachlan attended on Ms. Axelson, examined her, discussed her condition and decided what further tests should be conducted.

Dr. MacLachlan considered Ms. Axelson's circumstances relative to meningitis. He had had previous experience with this disease. He excluded it based on the results of a complete blood count (CBC) test that was ordered and the lack of severe stiffness of the neck muscles, called nuchal rigidity, which is associated with that condition.

He formed the opinion that the condition was attributable to influenza which could be treated by prescribing two Aspirin in addition to the Tylenol 3 given earlier by the emergency nurses. The use of these drugs was directed toward Ms. Axelson's continued complaint of fever and pain associated with a stiff neck and a headache.

#### **6.1.3 Dr. Ronald Paul Roy**

Dr. Roy, a pathologist and the Deputy Chief Medical Examiner of Alberta, conducted the autopsy. He testified that, in his opinion, death was caused by septicemia with disseminated intravascular coagulation which was caused by an infectious disease called *Neisseria Meningitidis*.

Dr. Roy noted the Autopsy Report that he completed on December 24, 1991 concluded meningitis was an additional cause of death. He explained that he applied a broader definition of the term "meningitis" than others might. He testified there may be some debate in the medical community concerning the use of the term to include the early stages of infection that precede the actual accumulation of large numbers of white blood cells in the subarachnoid space, which is the space between two layers of the membranes surrounding the brain.

Dr. Roy explained that he had concluded that meningitis was a cause of death because he had received a positive test result from a swab taken of the surface of the brain and he considered this to be an indicator of meningitis, as he defined it. He further testified he had not had the benefit of the results of Dr. Clark's microscopic examination of the brain at the time of the preparation of the Autopsy Report.

#### **6.1.4 Dr. Arthur Watts Clark**

Dr. Clark, a staff neuropathologist at the Foothills Hospital, conducted an examination of the brain of the deceased pursuant to a request by Dr. Roy, the pathologist who conducted the autopsy on Ms. Axelson. Neuropathology is the study of diseases of the nervous system.

Dr. Clark testified that on looking with the unaided eye at the brain of the deceased there was no evidence of a cloudy, milky fluid over the brain that would have indicated meningitis. This appearance is caused by the accumulation of a large number of white blood cells in the fluid which occupies the subarachnoid space. The accumulation of white blood cells is one of the human body's defence mechanisms against infection.

In addition, the weight and general appearance of the brain were not out of the ordinary and did not suggest meningitis to Dr. Clark.

Several samples of the brain were examined under a microscope by Dr. Clark. He did not observe the presence of white blood cells of the type or in numbers that would have indicated meningitis. His examination was made with meningitis in mind and he expended a greater amount of time in looking for such indicators than he might ordinarily have done in any other neuropathological examination after an autopsy.

His examination was negative in every respect; meningitis was not demonstrated by any indicia ordinarily associated with this

condition.

## 6.2. Septicemia

Based on the evidence heard at this Inquiry, I find Jennifer Axelson died of septicemia with disseminated intravascular coagulation due to or as a consequence of infection with the bacteria, Neisseria Meningitidis, Serogroup Type C.

Septicemia is a condition in which bacteria has entered the blood stream and is circulated about the body; what a layperson might call blood poisoning. Disseminated intravascular coagulation is a situation in which clotting of the blood has started in the body precipitated by a number of possible factors, including infection. As the clotting factors in the blood are used up, hemorrhaging occurs and the body may enter into shock.

### 6.2.1 Dr. Ronald Paul Roy

As mentioned above, Dr. Roy, the pathologist who conducted the autopsy, concluded that the cause of death was septicemia with disseminated intravascular coagulation. During autopsy, Dr. Roy noted there was hemorrhaging on the outer coverings or external surfaces of certain organs. Tests subsequently conducted on samples taken during the autopsy established the presence of Neisseria Meningitidis.

### 6.2.2 Dr. Deidre Church

Dr. Church, the Director of Microbiology at the Alberta Children's Hospital and an Associate Professor of the Department of Microbiology and Infectious Diseases and Medicine at the Faculty of Medicine of the University of Calgary testified at this Inquiry as an expert in the area of microbiology. She had not had any direct dealings with this case. She reviewed all the reports prepared by the hospital staff as well as the reports of Dr. Roy and Dr. Clark.

Dr. Church concludes Jennifer Axelson did not die of meningitis but rather septicemia caused by the bacteria, Neisseria Meningitidis. She testified that, although Neisseria Meningitidis is very common within the population, it can be particularly deadly when it invades the blood stream to be disseminated in the body of a person who has not been exposed to it before and, therefore, has no immunity to it. Once it spreads through the body, serious consequences can very quickly flow from the infection and the body's response to the infection. Death may occur within hours.

Even emergency wards of well-equipped hospitals experience a 5% to 15% death rate in such situations.

Dr. Church testified that when a patient demonstrates flu-like symptoms the differential diagnosis should include meningitis and septicemia. A differential diagnosis is a listing of the diseases which exhibit the same symptoms as those demonstrated by the patient.

Two key and relatively early signs of septicemia are the presence of petechiae or purpura and reduced blood pressure. Petechiae are small pin-point hemorrhages that look like a rash, generally found in the lower limbs or the hands. Purpura is a condition when hemorrhaging has developed to the point that purplish, bruise-like spots have formed on the skin. She did note that petechia is a transient symptom; it may not always be present at the moment of examination, thereby contributing to make septicemia difficult to diagnose. Dr. Church recommended a careful examination of the patient's body specifically for petechiae and purpura.

With regard to the taking of a patient's blood pressure, Dr. Church recommended that blood pressure should be measured not only in the lying position but also in the sitting or upright position. She testified that a reduction in blood pressure is an extremely important sign of shock.

Dr. Church further recommended that a blood culture test should be ordered in appropriate cases, although she recognized that, in some cases, septicemia may become fatal before the results of the test become available.

#### **7. Recommendations for the Prevention of Similar Deaths:**

1. It is recommended that the most recent information available regarding septicemia, its diagnosis and treatment, be communicated to all hospitals, physicians, nurses and other health care personnel throughout Alberta through the auspices of the appropriate professional organizations, including the Alberta College of Physicians and Surgeons and the Alberta Hospital Association.

2. It is also recommended that, during those times of the year when influenza is common, this information be updated and communicated to these organizations and professionals.

Septicemia is a potentially fatal condition that may result in death within hours. Even in a hospital setting, its onset can result in death in a significant percentage of cases.

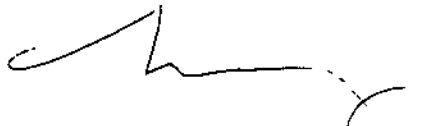
When symptoms of a very common condition, such as influenza, can mask a serious and suddenly fatal condition, such as septicemia, brought on by a common infectious organism, such as Neisseria Meningitidis, members of the medical profession should be advised on a regular and timely basis of the most recent information available.

An expert in this area, Dr. Church, testified that looking for the presence of petechia or purpura, taking blood pressure readings with the patient in different positions and ordering blood culture tests in appropriate cases are three important steps that should be taken when a differential diagnosis includes septicemia.

Dr. Ginzer testified that he looked for but did not find petechia during his examination of Ms. Axelson. Although, septicemia is studied as part of the curriculum in medical schools, Dr. Ginzer, testified that he was not aware that petechia was a symptom of septicemia. In addition, Dr. Roy, the pathologist, testified he looked for petechia during the autopsy and did not find any on the body, however, he was also not aware that petechia was a sign of septicemia. It is my opinion that notice should be given to all members of the medical profession about the most recent medical knowledge concerning septicemia.

Recognizing that new developments in medical research can very quickly make a diagnostic test or a treatment program obsolete or inappropriate, I do not recommend any particular test or treatment program.

Dated August 19, 1992  
Calgary, Alberta



MANFRED DELONG  
A JUDGE OF THE PROVINCIAL COURT OF ALBERTA

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