

March 3, 1999



Dr. Morton Reingold
Coroner, Metropolitan Toronto
26 Grenville Street
Toronto, ON
M7A 2G9

Dear Dr. Reingold:

RE: Lisa Shore, HSC # 1631889

I enclose a copy of the response to the questions in the letter to the Coroner's Office. These answers were assembled following our meeting with you March 1/99. These written responses were reviewed and edited by myself, Cathy Segun (Director Surgical Services), Lawrence Roy (Anaesthetist - In - Chief) and James Wright (Attending Orthopaedic Surgeon). As you know, Lisa Shore was admitted to The Hospital for Sick Children on October 22, 1999. She was admitted through the Emergency Department to Unit 5A, the Orthopaedic and General Surgery unit and died at 07:52 on October 22, 1999. It was an unexpected death and the Coroner was notified. A post mortem was ordered by the Coroner and the hospital is anxious to know the findings from the post mortem.

This was a very sad event and we offer sincere condolences to the entire Shore family.

Call me at 813-6871 if you need further information.

Yours truly,

Marion Stevens
Risk Management

Response to Questions regarding Lisa Shore

The hospital chart of Lisa Shore has been sent to the family and the Coroner. Lisa was admitted to Unit 5A, under Orthopaedics, however the pain management team of the Department of Anaesthesia provided much of the initial medical care. A Corometric monitor was attached to Lisa Shore once she was admitted to 5A. Lisa's vital signs were noted and thereafter she was settled for sleep. Mrs. Shore, her mother, remained with Lisa, in her room overnight.

Number 1 and 2. A Corometric monitor displays heart rate and respiratory rate continuously. Leads from the monitor are attached to the patient's chest. The heart rate and respiratory rate are displayed numerically on the front panel of the monitor. The device will alarm when heart rate and or respiratory rate change significantly. The Nurse set the alarms at 50 to 60 bpm for the low heart rate and 160-180 bpm for the high heart rate as appropriate to Lisa's age. She states that after several attempts to stop the apnea alarm from sounding false alarms and because Lisa was unable to get to sleep, she (the nurse) turned the apnea alarm off. The high and low heart rate remained set at the alarm settings noted above. The Clinical Instructor confirmed the presence of a Corometric in the room and the settings described above, after the arrest code was completed. The nurses checked Lisa hourly through the night and they stated that the monitor was on and the monitored heart rate correlated to the heart rate they observed by taking the pulse.

3. The Corometric is not connected to the Central Nursing Station. The display is only available in the patient's room. A loud audible alarm will sound if the heart rate is outside the range of the preset limits, or if the chest leads are disconnected. The alarm can be heard outside of the patient's room. The alarm will continue to sound until the monitor is reset.

4. There is no memory nor monitor read-out feature on the Corometric. The nurses checked respiratory rate and heart rate every hour and documented their observations on the flow sheet.

5. The documentation does not state that a Corometric was applied on admission although the nurse states that she applied it when Lisa was first admitted to the unit. The nurse relieving for break concurs that the Corometric was attached to Lisa and the readings on the monitor for heart rate were the same as Lisa's heart rate taken by pulse. The Corometric is a small monitor about the size of a portable notebook computer and remains on the bedside table at the patient's bedside.

There is a monitoring protocol for patients receiving intravenous morphine via a patient controlled analgesia (PCA) infusion pump. The protocol includes apnea and heart rate monitoring and oxygen saturation monitoring is optional. The monitoring orders were placed on the hospital computer system (Kidcom) Computer orders for Lisa included oxygen saturation monitoring. This monitor was not applied. The heart rate and respiratory rate were recorded hourly. The sedation scale and pain scores (numeric scores) also part of the protocol were not recorded although there is an assessment of level of consciousness in the patient record.

6. The blood pressure was taken on admission and was not taken for the remainder of the shift. This was possibly an attempt not to awaken Lisa once she had begun to rest. The nurse was aware of the increase in heart rate and reported to the Pain Service fellow at 04:05. The pain fellow notes they discussed her level of consciousness and respiratory rate.

7. A Corometric monitor was applied to Lisa on arrival. It was working properly up to and until the 06:00 check. See Number 1 and 2 above. Why did the alarm not sound when Lisa's heart stopped? We don't know the answer.

8. The Corometric monitor was not sequestered following Lisa's death. The PCA and IVAC pumps were secured under the Coroner's warrant. The two pumps do have a memory capability and have been sent for external evaluation by the Coroner's Office.

9. The Nurse called the Pain Service fellow and has documented that the "Pain Service aware". She recollected that she reported Lisa's respiratory rate, heart rate and sedation level. At 02:50 hours, she has documented that she took away the PCA pump by removing the hand held device. This hand held device allows the patient to signal the PCA pump to administer additional drug.

10. The pertinent protocols in Lisa's case would be the PCA protocol, see attached.

11. See Number 5.

12. There are no specific numbers in the pain protocol for notifying a physician about heart rate. This is a judgment call which the nurse makes based on many factors, for example: underlying cause of pain, amount of pain, child's age and physical condition. The PCA pumps are used frequently on Unit 5A and the staff know the protocols, such as doing the respiratory rates and heart rates.

13. The Nurse makes a judgment about the appropriate settings for the alarms according to the patient's age and condition. In a child of Lisa's age, the low heart rate will generally be set about 50 -60 beats per minute and high heart rate at 160-180 beats per minute. The nurse advised that this is what she set the alarms at in Lisa's case. The Clinical Instructor confirmed these settings after the patient's death.

14. Morphine – 14.5 mg. is the actual total dose Lisa received. This includes the 10.5 milligrams from the PCA pump and two bolus doses of 2 milligrams each (4 milligrams total bolus). Lisa did not receive any morphine on the Unit 5A. Dr. Wright has agreed that the total amount of morphine was 14.5 milligrams. Dr. Wright agrees that the morphine which Lisa received was in the Emergency Department prior to admission to the Unit.

15 and 16. The physician from the Pain Service said that he asked if the vital signs were normal and was told they were. He said to remove the PCA pump to ensure Lisa did not administer any additional morphine and was told it had already been removed. He said that he would have come in to assess Lisa if

he had felt it was necessary. He also said he told the nurse to call back if concerned and he did not have any further calls that night.

17. At 05:00, the nurse assessed the patient and Lisa was asleep upon the nurse's arrival in the room. The nurse awoke Lisa and took an oral temperature. The chart states temperature was 35.7 po, which is per os (by mouth). The nurse states that she awakened Lisa and asked to take her temperature. Lisa responded by opening her mouth as requested and the nurse placed the thermometer in her mouth. Lisa fell asleep shortly thereafter. The nurse noted the respirations and heart rate. Her observations corresponded to the rates displayed on the Corometric monitor.

18. The nurse noticed that Lisa's respirations were decreased to 8 and 10 at 02:50 hours. She listened to the chest and the patient's chest was clear with good air entry. Based on the PCA protocol, the Nurse took away the PCA pump at that time. She paged the Pain Service fellow and did not receive a return call. The pain fellow notes he did not receive a page at 0250. At 0405 she paged the Pain Service fellow as Lisa was very drowsy. When the nurse spoke to the Pain Service fellow and he said to remove the PCA button, the nurse replied that she had already done that at 0250. See Number 16 above. The note written at 0900 hours was not the nurse directly involved at 0250 and 0405 and the time is incorrect. The PCA pump was removed at 02:50.

19. Both nurses state that they listened to Lisa's chest with a stethoscope and counted the respirations using their stethoscope and watching Lisa's chest movement. At 02:50, the nurse records: Chest clear, good A/E (air entry). Based on their assessment, Lisa's color was pink and she was warm throughout the night. They did not feel her respirations were laboured or shallow at any time. They attributed her increasing heart rate to the fact that the patient may be experiencing pain. An increased heart rate is a normal response to pain. Lisa had not received any sedation/analgesia since admission.

20. The blood gas sample was taken about 20 minutes into the arrest. These blood gas results reflect the patient's status at 0740. The patient was discovered VSA (vital sign absent) at 0715. Twenty five minutes of little or no cardiac output could produce similar blood gas results. These results cannot be interpreted to provide a time for onset of cardiac arrest.

21. The nurses did cover for each other for breaks and the nurses state that they stayed on the Unit for their breaks and could be called back quickly, if necessary.

22. The nurse states that she paged the Pain Service at 02:50 and did not obtain a reply. She called again at 04:05 hours and spoke to the Pain Service fellow. The fellow did not receive a page at 02:50 hours.

23. The Nurse documented 8, 10 as the respiratory rate at 02:50 and took away the PCA button. These readings are two separate readings for respiratory rate.

24. There has not been a similar death at HSC. The Pain Service has reviewed their records and have not had a similar death at any time. In addition, the hospital would report such a death to the Coroner just as was done in Lisa's case. The Coroner has not been notified of such a death.