

# DEATH REPORT

MEDICAL CERTIFICATE REGARDING CAUSE OF DEATH. SUBMIT WRITTEN REPORT WITHIN 7 DAYS OF EVENT

**Instructions:**

RETAIN COPY OF REPORT TO PROVIDE FOR CLIENT

NAME OF THE DECEASED Laura Markenham	SEX F	DATE OF BIRTH 03/11/1945
PLACE OF DEATH Residence - 451 Ermaedal Street	WEIGHT 48 kg	DATE AND TIME OF DEATH 07/03/2021 9:40 AM

**CAUSE OF DEATH**

STATE THE IMMEDIATE CAUSE OF DEATH (IF AUTOPSY REPORT MADE, SEND COPY OF TOXICOLOGY REPORTS WITHIN 15 DAYS)

Examination of the deceased indicates that immediate cause of death was cardiopulmonary arrest.

STATE UNDERLYING CONDITIONS OR CONTRIBUTIONS PRIOR TO OR RESULTING DEATH

Toxicology reports reveal evidence of high salicylate levels. However, it is undetermined if these results reflect a case of chronic salicylate toxicity.

STATE RELEVANT MEDICAL HISTORY

Laura M. was diagnosed with rheumatoid arthritis 4 days prior to death. She was prescribed aspirin medication (81 mg) to be administered as directed in attached prescription.


**Manner of Death**

Natural  Accidental  Suicide  Undetermined

If "Undetermined", is an investigation in process (Circle what applies)?

Yes  No

Name of Medical Examiner: Dr. Felipe Kalum

Signature: 

Date: 07/03/2021

FOR Laura Markenham DATE March 3rd, 2021

ADDRESS 451 Ermaedal Street, Toronto, ON Canada

REFILL 1 TIMES

A generically equivalent drug product may be dispensed unless the practitioner hand writes the words "Brand Necessary" or "Brand Medically Necessary" on the face of the prescription.

**R<sub>x</sub>**

Provide Baby Aspirin (81 mg) tablets  
(100 pills per bottle)

Take 2 tablets every 4 hours (Q4H)

**Dr. Rene Sergez**

**ES2794608**

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SIGNATURE

\_\_\_\_\_  
DEA NO.

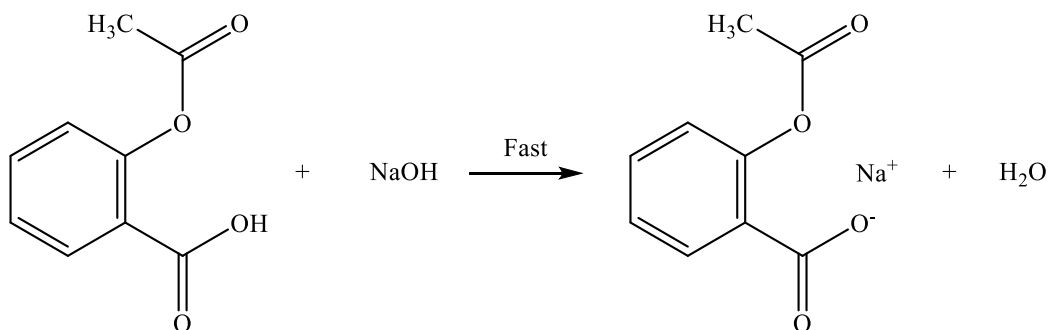
## Accidental Overdose

A common cause of improper medicine usage is non-compliance with the instructions prescribed by the primary care physician, which is often referred to as “medication non-adherence.”<sup>1</sup> Inappropriate usage of medication can result in deteriorating health and in severe cases, death. The attached death certificate pertains to the recently deceased Laura Markenham, whose toxicology report suggested a possible acetylsalicylic acid overdose. However, her family have asked for further investigation into the cause of

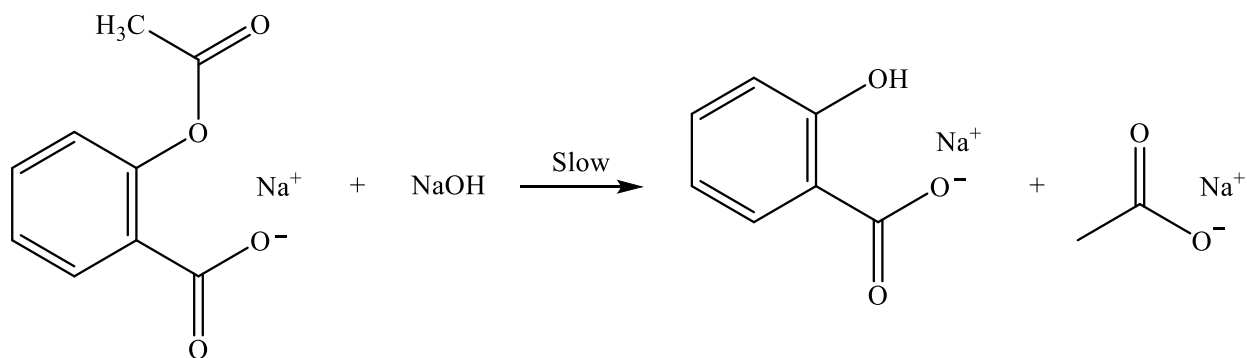


death, as they reported she had supposedly been adhering to the new prescription method provided to her by her physician. Laura had mentioned to her family that she would pick up the newly prescribed aspirin tablets once she had finished the aspirin bottle that she already had at home. Investigators found the aspirin bottle by Laura’s bathroom sink with a worn-off label. Investigators suspect that Laura took these aspirin pills of an unknown dosage according to the new prescription’s recommended dosage schedule of two pills every four hours. If the dosage of the aspirin tablets that she had at home were significantly higher than what was prescribed, then the frequent administration of these tablets may have resulted in an accidental overdose.

Chemists crushed one of the pills obtained from the unlabelled medication bottle and dissolved it in 200 mL of water. It is your job as a laboratory technician to analyze the aspirin content in each pill, and then calculate Laura’s total aspirin intake per day. Determine the aspirin concentration in the provided solution and use that to calculate the mass (in milligrams) of acetylsalicylic acid in each aspirin pill. You must then determine if the daily dosage over a period of four days could have resulted in chronic aspirin overdose and death, given that chronic toxicity is possible at dosages over 100 mg/kg per day for two or more consecutive days.<sup>2</sup> Could Laura’s death have been an accidental overdose?



**Scheme 1.** The acid-base reaction that rapidly occurs upon addition of sodium hydroxide to acetylsalicylic acid.



**Scheme 2.** The hydrolysis reaction of acetylsalicylate that slowly occurs in the presence of excess sodium hydroxide.

### Available Materials for Your Experiment

- 10 mL volumetric pipette
- 250 mL Erlenmeyer flask
- 1M NaOH solution (use 10 mL per experiment)
- 0.5 M HCl solution
- Retort stand
- Burette clamp
- Burette
- Liquid funnel
- Phenolphthalein indicator solution
- Hot plate
- Unknown sample solution containing one aspirin pill of unknown strength dissolved in 200 mL of distilled water.

**Note: All required laboratory equipment will be provided. You should not use the entire 200 mL of unknown solution at once, but you should perform the experiment in duplicate and average your final results.**

### References

1. Jimmy, B.; Jose, J. Patient Medication Adherence: Measures in Daily Practice. *Oman Medical Journal* **2011**, 26 (3), 155–159.
2. Temple, A. R. Acute and Chronic Effects of Aspirin Toxicity and Their Treatment. *Archives of Internal Medicine* **1981**, 141 (3), 364.