

# Is it Murder?

## Part 1. Ethylene Glycol Poisoning?

(The following is based on a true story.)



On July 7, 1989, Patty Starling's three-month old son, Roger, had trouble breathing and was vomiting uncontrollably. She took him to the emergency room of the Cardinal Givens Children's Hospital, where a toxicologist diagnosed Roger's symptoms as ethylene glycol poisoning. Concerned for the child's safety, the physician had Roger placed in a foster home where his parents could have visits with him. Shortly after one of these visits, Roger became critically ill and died. Mrs. Starling was charged with first-degree murder. Test results from two laboratories showed significant amounts of ethylene glycol in milk from a bottle she had given her son during the visit. Mrs. Starling denied the charges which she claimed were absolutely absurd.

**What questions do you have? Make a list.**

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## Part 2. A Wrinkle in the Case

During the next seven months, while Mrs. Starling was in prison, she gave birth to a second son, John, Jr., on February 17, 1990. Even though he was ordered separated from his mother at birth, he had symptoms similar to Roger's. Analysis of organic acids in blood and urine showed the presence of methylmalonate.

	Daily urinary excretion of methylmalonate	Blood plasma levels of methylmalonate
J. S.	1370 mg	11.2 mg/100 mL
Normal control	<5 mg	Not detectable

**What do you conclude?  
What would you do next?**

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### Part 3. Justice?

John Jr. tested positive for methylmalonic aciduria (MMA). Dr. James Shoemaker, an expert in GC-MS identification of small molecules, asked for and received a small sample of Roger's blood to see if Roger might also have suffered from MMA. His data supported that hypothesis but in addition it showed trace non-lethal amounts of ethylene glycol. Starling's attorney said there was no way he could challenge the evidence that ethylene glycol was present in Roger's blood and in the milk. The jury was not permitted to hear evidence that Roger might have had MMA and convicted Mrs. Starling of murdering her son. She was sentenced to life in prison in January 1991.

**What questions do you have?**

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### Part 4. What Next?

The media picked up on the case and described it on the TV show, "Unsolved Mysteries." William S. Sly, MD and Chairman of Biochemistry and Molecular Biology at St. Louis University School of Medicine, saw the program and contacted Dr. Shoemaker who was in his department. They reexamined the serum from Roger and made the following conclusions:

- 1.) Roger's blood did not contain ethylene glycol.
- 2.) Abnormal elevations of organic acids in Ryan's blood serum made the diagnosis of MMA virtually certain.
- 3.) One of the compounds in Ryan's blood, propionate, is elevated in MMA and could be confused with ethylene glycol by older gas chromatographic testing techniques. [Shoemaker et al. (1992) J. Pediatrics **120**, 417-421]

After some unusual legal activities and additional consultations with researchers who had expertise on MMA, Mrs. Starling was released from prison. For the full story see:  
<<http://www.justicedenied.org/patriciastallings.htm>>

**Are there any inconsistencies in the case?**

**Was Mrs. Starling lucky?**

**What treatment should John, Jr. receive?**