

Medicine in Stamps

Ignac Philipp Semmelweis (1818-1865): handwashing saves lives

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In the annals of medical history, fewer figures were more tragic than Dr Ignac Philipp Semmelweis, a Hungarian physician whose simple advocacy of handwashing saved the lives of thousands of women. The medical community however, was resistant to change. As a result, the needless loss of lives continued, and a tenacious pioneer was condemned to a mental asylum and an early grave.

Ignac Semmelweis was born in Hungary on July 1, 1818, the fifth of seven children. His father was a humble shopkeeper, and young Semmelweis grew up with an awkward command of the Hungarian and German languages. His medical studies, initially in Hungary and later in Vienna, brought him into contact with leading Austrian academics who were to be his early supporters. They were Dr Karl von Rokitansky, a brilliant professor of pathologic anatomy, Dr Josef Skoda, a stern but influential clinician, and Dr Ferdinand von Hebra, a mild-mannered dermatologist who was to remain a lifelong friend.

Putrid Hypothesis and Lime Solution: Semmelweis obtained his first job as an assistant in the First Division Obstetric Clinic at Allgemeines Krankenhaus (Vienna's General Hospital) under Dr Johann Klein. The First Division treated pregnant women in a teaching environment and had the dubious honour of having an extremely high mortality rate of 25%, mostly from puerperal or childbed fever. In contrast, mortality in the Second Division, a ward for training midwives, was only 3%, and the rates for women who gave birth at home or on their way to the hospital were also much lower.

Obsessed with these statistics, Semmelweis was dissatisfied with the prevailing causation hypotheses that included miasmas, fear, constipation, delayed

lactation, crowdedness and seasonal influences. In 1847, Dr Josef Kolletschka, a friend and idol, cut his finger at work and subsequently died of lymphangitis and blood poisoning. In a flash, Semmelweis saw the truth as he later recounted: *"Totally shattered, I brooded over the case with intense emotion, until suddenly a thought crossed my mind; at once it became clear to me that childbed fever and the death of Professor Kolletschka were one and the same because they both consist pathologically of the same anatomic changes. If, therefore, in the case of Professor Kolletschka . . . septic changes . . . arose from the inoculation of cadaver particles, then puerperal fever must originate from the same source. . . ."*

The observant Hungarian had discovered the culprits that spread puerperal fever, ". . . the fingers and hands of students and doctors, soiled by recent dissections, carry those death-dealing cadavers' poisons into the genital organs of women in childbirth. . ." He noted that medical students and doctors frequently started the day in the necropsy room before examining patients, and their hands often smelled of cadaverous material. Midwives on the other hand, usually did not perform or even attend autopsies and that would explain the differing mortality statistics between the First and Second Divisions. The seasonal variation in childbed fever also correlated well with the number of autopsies performed, as exuberance of medical students was highest at the beginning of the year and tapered off as time progressed. His theory that puerperal fever was a contagious disease was as obvious as it was extraordinary – coming some nine years before Pasteur's germ theory of putrefaction and 20 years before Lister invented his carbolic antiseptic spray.



Semmelweis instituted a handwashing regimen using a chlorinated lime solution, despite protests from doctors, students and staff. The number of deaths in the wards dramatically declined to 1-2%. The next year, the policy was broadened to include the cleaning of instruments, and isolating patients with putrid wounds. These measures virtually eliminated childbed fever on the wards.

Rejection: Unfortunately, recognition eluded Semmelweis. The older faculty in Vienna and many European medical societies did not accept the contagion theory and were especially resistant to washing their hands between patients. Vocal opposition also came from his boss, the strongly conservative Chief of Obstetrics, Dr Klein, who continued to claim that childbed fever was unsolvable and a problem that many hospitalised mothers were destined to have. Handwashing was an insult to the image and pride of doctors, since physicians' hands were meant to cure disease and cannot be a cause of spread. In 1849, Dr Klein refused to reappoint Semmelweis as his clinic assistant and he abolished the handwashing measures, causing mortality to rise once more.

But Semmelweis was his own worst enemy. Despite the urgings of colleagues, he stubbornly delayed publishing or presenting his astute observations. He also failed to harness experimental evidence in support of his theory. Additionally, an inferiority complex and paranoid ideations haunted him. Lacking the pedigree lineage and language mastery, the foreigner he believed himself to be could not penetrate Vienna's academic circle. Unable to regain his clinic position, he finally considered an appointment at the school of midwifery, but it came with the stipulation that he could only teach on a mannequin. This final insult to his ego was more than he could bear. He fled Vienna in rage for his native Hungary without telling even his closest friends, angering them in the process.

After abandoning his ambitions in Austria, Semmelweis managed to receive an honorary appointment without pay at the Pest St. Rochus Hospital, and later as Professor of Theoretical and Practical Midwifery at the University of Pest in Hungary in 1855. There, his methods were again shown to markedly reduce mortality. Favourable results notwithstanding, he met once more with distrust and disbelief. His presentation to the Medical Society of Vienna in 1850 came too late to reverse the mindset of his peers, which included

the prominent pathologist Rudolph Virchow. The final attempt, a verbose and indigestible book entitled, *The Etiology, Concept, and Prophylaxis of Childbed Fever*, was meant as a definitive answer to his many critics, but it won few converts.

Semmelweis righteously believed that handwashing saved lives but he could not convince his medical brethren (*"My doctrine is produced in order to banish the terror from lying-in hospitals, to preserve the wife to the husband, and the mother to the child"*). In desperation, he wrote open letters and directed verbal invectives against the non-believers, calling them murderers. In one of his most vitriolic passages, he hurled these words at Professor Friedrich Scanzoni, an influential Professor of Obstetrics at Würzburg: *"If, Sir, without having refuted my doctrine, you continue to teach the students and midwives that you train that puerperal fever is an ordinary epidemic disease, I proclaim you before God and the world to be an assassin and the history of puerperal fever would not do you an injustice were it, on opposition to my life-saving discovery, to immortalize you as a medical Nero."*

Tragic End: The doctor from Hungary spent his final years fighting bouts of depression. By 1865, he began losing his memory and developed fits of violent behaviour that eventually turned into florid psychosis. His wife and the kindly dermatologist von Hebra admitted him to a private asylum in Vienna where he died two weeks later. He was only 47 years old. Folklore has it that he succumbed, ironically, to puerperal fever stemming from a finger cut during his last dissection. At least one historian has suggested otherwise – that the likely cause of death was the fatal beatings he sustained from asylum guards who tried to subdue him.

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