

IGNAS SEMMELWEIS: THE DOCTOR WHO CHAMPIONED HAND -WASHING

Ignas Semmelweis was born in July 1st, 1818 in Taban (Budapest) in Hungary (1). He died on 13th August 1867 at the age of 47 years in Vienna, Austria. He initially studied law at the University of Vienna in 1837 but changed to medicine in 1838 obtaining his doctorate degree in 1844. He later specialized in obstetrics. He learned diagnostics and statistical methods and underwent surgical training before employment as an assistant surgeon in the Vienna General Hospital.

This is the story of a man whose ideas saved a lot of lives and spared countless numbers of women and newborns feverish and agonizing deaths from puerperal sepsis. This was the start of golden age of the physician scientist, when physicians were expected to have scientific training. He got interested in puerperal fever which was causing high maternal and neonatal mortality. Semmelweis was no longer thinking of illness as an imbalance caused by bad air or evil spirits. He looked instead to anatomy and did autopsies.

When he showed up for his new job in the maternity clinic at the General Hospital in Vienna, he started collecting some data of his own. Semmelweis wanted to figure out why so many women in maternity wards were dying from puerperal fever - commonly known as childbed fever. He studied two maternity wards in the hospital. One was staffed by all male doctors and medical students, and the other was staffed by female midwives, and he counted the number of deaths on each ward.

When Semmelweis crunched the numbers he discovered that women in the clinic staffed by doctors and medical students had a death rate of 13.10% as opposed to the women in the midwives' clinics that had a death rate of 2.03%. This was nearly five times higher in the first clinic as compared to the second clinic. However there were no obvious explanations for the high contrasting statistics and several causes were attributed.

He also noted that women who gave birth in the street never got the fever. The two clinics used the same delivery techniques. The only difference was that the doctors and medical students went to the laboratory to do post mortems. The breakthrough came when his friend Jacob Kolletschka was accidentally poked by his student's scalpel during autopsy. The autopsy was similar to the women who died of puerperal fever. Semmelweis went through the differences between the wards and started ruling out ideas. Right away he discovered a big difference between the two wards. In the midwives' clinic and wards the women gave birth on their sides. In the doctors' clinic, women gave birth on their backs. So he had women in the doctors' clinic give birth on their sides. The result showed was no "effect" as regards the mode of delivery.

Then Semmelweis noticed that whenever someone on the ward died of childbed fever, a priest would walk slowly through the doctors' clinic, past the women's beds with an attendant ringing a bell. This time Semmelweis theorized that the priest and the bell ringing so terrified the women after birth that they developed a fever, got sick and died.

So Semmelweis hypothesized that there were cadavers particles, little pieces of corpse that students were getting on their hands from the cadavers they dissected. And when they delivered the babies, these particles would get inside the women who would develop the disease and die. If Semmelweis' hypothesis was correct, getting rid of those cadaverous particles could cut down on the death rate from childbed fever. So he ordered his medical staff to start cleaning their hands and instruments not just with soap but with a chlorine solution. Chlorine, as we know today, is about the best disinfectant there is. Semmelweis didn't know anything about germs. He chose the chlorine because he thought it would be the best way to get rid of any smell left behind by those little bits of corpse. And when he imposed this, the rate of childbed fever fell dramatically. The mortality rate in the first clinic dropped at 90% rate and got comparable to the second clinic. The mortality rate in April 1847 was 18.3% but after hand washing it dropped to 2.2% in June, 1.2% in July and to zero in two months the following year (2). What Semmelweis had discovered is something that still holds true today: Hand washing is one of the most important tools in public health. You'd think everyone would be thrilled. Semmelweis had solved the problem! But they weren't thrilled. For one thing, doctors were upset because Semmelweis' hypothesis made it look like they were the ones giving puerperal fever to the women. And Semmelweis was not very tactful. He publicly berated people who disagreed with him and made some influential enemies. He wrote open letters full of bitterness, desperation and fury and very offensive (3).

Although hugely successful; Semmelweis' discovery directly confronted with the beliefs of science and medicine in his time. His colleagues and other medical professionals refused to accept his findings mainly because they did not find it convincing that they could be responsible for spreading infections. The reaction reflected on his job as well when he was declined a reappointment in 1849.

Ignaz Semmelweis was himself reluctant to publish or demonstrate his research findings publicly but some of his students and colleagues wrote letters and delivered lectures explaining his work. But later, he somehow got convinced and in 1850, he delivered a few lectures in Vienna on the Origin of Puerperal fever.

He returned to Budapest in 1851 and joined St. Rochus Hospital remaining there till 1857. His antiseptic methods proved to be fruitful here as well. In a series of letters written in reaction to his critics at a conference in Germany, Rudolf Virchow outrightly rejected hand washing. However his doctrine was finally accepted by medical science and became a pillar in infection control and hailed by Joseph Lister the father of modern antiseptics who said “I think with the greatest admiration of him and his achievement and it fills me with joy that at last he is given the respect due to him”.

The continued criticism and lash out finally broke him down. By 1865, he was suffering from depression, forgetfulness and other neural complaints and was eventually committed to an asylum. He only lasted there for two weeks and died on August 13, 1865 at the age of 47. Ironically he died from blood poisoning “pyaemia” from a gangrenous wound after assault by asylum guards (4) basically the same disease he fought so hard to prevent (5). On his death bed he said “when I look back upon the past, I can only dispel the sadness which falls upon me gazing into that happy future when the infection will be banished... The conviction that such a time must inevitably sooner or later arrive will cheer my dying hour”.

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