Ignaz Philipp Semmelweis was born in 1818, in Taban, the capital of Hungary. He was the fifth of seven brothers and the son of merchants. Hungary was then part of the Austro-Hungarian Empire, whose capital was Vienna.

Semmelweis began his medical studies in Hungary, and later moved to the University of Vienna where he graduated as an obstetrician in August 1844, assisting women during pregnancy and delivery. Popularly known as the “Saviour of Mothers,” he discovered that the incidence of puerperal fever could significantly fall with hand disinfection in obstetric clinics.

Ignaz Semmelweis great achievement was, in the middle of the 19th century, to discover the infectious nature of puerperal fever (“childbirth fever”), and he managed to control its onset with a simple antisepsis measure, struggling with the opposition of his medical colleagues who did not accept his observations, which, for the first time in the history of medicine, were supported by a large amount of statistical data. He discovered that nosocomial infection of patients by the contaminated hands of healthcare workers was a major method of spreading infectious agents.

In the midst of the coronavirus crisis and commemorating the Global Handwashing Day on 15th October, we are about to look at the story of Ignaz Semmelweis, the doctor who taught the world that proper handwashing could prevent infections and save lives.
It is currently estimated that sepsis, infections that trigger a chain reaction throughout the body and usually caused by bacteria and viruses, is responsible for thousands of deaths worldwide every day.

We are aware, specially today with the deep health crisis that the pandemic is causing globally, how important hand hygiene is to control infections and their potential spread. Even so, handwashing is less frequent than it should be.

At present, it is difficult to understand that a routine action such as handwashing before or after doing activities considered risky, could cause so much controversy and rejection towards the person who raised it as a basic measure for the care of patients at that time. It happened to Ignaz Semmelweis, who not only discovered that this simple measure could save lives, but also applied statistical testing to his findings for the first time in history.

**Who was Ignaz Semmelweis?**

It may be interesting to briefly explain the story of this man who successfully related infections of people in the hospital where he worked, to how frequently fellow doctors and medical students from the same hospital washed their hands.

At the age of 28, Ignaz Semmelweis was appointed assistant to the first gynaecological clinic of the Allgemeines KrankenHaus (Vienna General Hospital). At the time, this prestigious Viennese clinic was one of the centres chosen by numerous medical students from different European countries to do their final degree internships. Semmelweis noticed the large number of women who died from fever, responsible for the death of 10-35% of women in labour.

In 1847 Semmelweis proposed to carefully wash their hands with a calcium hypochlorite solution when he worked in the First Obstetric Clinic (Clinic I) of the Vienna General Hospital, where mortality among patients hospitalised in the ward assisted by obstetricians (Clinic I), was three to five times higher than in the ward assisted by midwives (Clinic II).
Shocked by what he saw, he began to gather information, quantify data and reflect on what he was researching. He began to notice frequency differences in the disease onset between the two existing maternity wards and concluded, after great efforts and researches, with the development of a new concept: that hands of doctors and students who visited mothers in labour at the Clinic transported a “cadaverous material” that generated the fatal disease. He suggested using chlorine solutions for doctors and medical students’ handwashing, before and after treating and examining their patients.

This measure began in mid-May 1847. He thoroughly wrote down the deaths profile during time periods and discovered that, by simply washing the hands, deaths decreased dramatically. He consulted the archives and records of the Vienna maternity hospital from its opening in 1784 to 1848. He drew up tables with the data on deliveries, deaths, and mortality rates for those years. He observed significant differences in mortality rates, for example, 12.11% in 1842 vs. 1.28% in 1848.

He assessed the fatal effect of the obstetric care provided by medical students, who came from doing autopsies and practices with corpses, compared to the lower mortality rates among the patients assigned to midwives in Clinic 2, who had no contact with anatomical studies in corpses.

The scientific society responsible for analysing the problem gave the most disparate reasons, from death due to the anxiety caused by the sound of the bell of the altar boy who preceded the priest when he went to administer the sacraments to the dying, to the shame women felt in front of the students or even the bad ventilation.
Semmelweis was aware of the absurdity of these interpretations but did not know the cause of the puerperal fever. However, everything changed when a friend and colleague of his from the hospital died, after a student injured his finger with the scalpel during an autopsy in one of the classes he taught. He found that the symptoms were the same as those of the women who died of fever, and that the findings of his necropsy were similar in every aspect.

Semmelweis vigorously defended his discovery and the health of his patients, “we must stop the massacre,” he wrote. “Once the cause of the increased mortality in the first clinic was identified as cadaverous particles adhering to the hands of the examiners, it was easy to explain why women who delivered in the street suffered a strikingly lower mortality rate than those who delivered in the clinic...”.

He realised that these cadaverous particles entered the affected person’s bloodstream and could affect women who had given birth, pregnant women and the newborn children. His observations were not taken into consideration, and he was even threatened by his own colleagues.

He was clearly blaming doctors and medical students for these deaths. It was an insult to the image of doctors. They even claimed that Semmelweis was calling them murderers. His own boss, Professor Klein, was against him and forbade this sanitary measure, dismissing him in 1849 and leaving Braun in charge, who believed that it was all a problem of poor ventilation. Again, the death rate increased.

The data was incontrovertible: Puerperal fever mortality rates for the First Clinic at the Vienna Maternity Institution fell significantly when Semmelweis implemented hand washing in mid-May 1847.
Recognition of his discovery

From that moment on, one of the biographers who wrote about Semmelweis, Frank Slaughter, suggested in 1950 that the tragic experiences Semmelweis had to face “destroyed his mind” and made him “a martyr of the world’s stupidity”, “the long years of controversy, the bitter frustration suffered, the memory of the patients he saw die, first because he could not discover the reason and then because his colleagues could not understand the simple principles that he proposed to avoid deaths”.

A few years later, the “experimental medicine” method started to take shape. Pasteur recognised Semmelweis’ merit in 1879, at a meeting of the Academy of Sciences in Paris, in which puerperal fever was discussed. In one of the presentations, one of the speakers was talking about potential causes of this disease. Pasteur interrupted him saying: “none of that explains puerperal fever: it is nurses and doctors who carry the microbes from an infected person to a healthy one.” That same year Pasteur identified streptococcus as the causative agent.

Nowadays it is difficult to understand that such a routine action as handwashing caused so much controversy and even rejection of the person who raised it as a basic measure for the care of patients.

We are currently living moments that could take us back to the time of Semmelweis. On the one hand, the denial in light of the evidence of proven facts, for the simple reason of not having to assume any responsibility due to the ignorance and arrogance of those who hold senior positions in society, just like those doctors who rejected Semmelweis discoveries which could have saved a large number of lives; and on the other, the destruction and concealment of evidence that prove an error, with the consequent negative repercussions, instead of recognising the management’s inability and delegating it to those who really understand the problem, like Semmelweis’ dismissal from the hospital where he used to work, unfortunately represent a certain parallelism between what that hospital story represented and the sad reality we are living now.

The purpose of this post was to reinforce the argument of how important hand hygiene is in our everyday lives, in our daily activities, remembering that man who dedicated his life, as we have observed, to demonstrate that we can transmit and contract countless diseases caused by microorganisms through our hands. History has fairly valued this Hungarian doctor after his death. His life was that of a man who fought with integrity and without hesitation for his ideals and convictions.

One of the last things Semmelweis wrote is disturbing: “When I look back upon the past, I can only dispel the sadness which fall upon me by gazing into that happy future when the infection will be banished. The conviction that such a time must inevitably arrive sooner than later, will cheer my dying hour”.

Unfortunately, we are at present living a large-scale pandemic, we know how important hygienic measures are to fight against this virus (masks, physical distance between people, hand washing...), so let’s follow and enforce them.

In the absence of other solutions that are likely to come in future, let’s use these preventive measures to avoid infection.

Let’s learn how to wash our hands and do it often.

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Marcelo Miranda C. y Luz Navarrete T. Clínica Las Condes, Santiago, Chile


For more information, please contact:
Afrikalaan 182, B - 9000 Gent
T + 32 9 223 38 71
E info@christeyns.com