The Childbed Fever Mystery and the Meaning of Medical Journalism

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On the occasion of the first publication of the *McGill Journal of Medicine,* it seems particularly appropriate to look back into the medical past, into the early days of medical theory and practice, and into the texts that gave birth to the modern medical journal as we know it. Although the development of modern Western medicine is most often believed to have begun with Hippocrates ca. 400 B.C., Egyptian scribes compiled papyri filled with practical remedies at least 900 years earlier. Throughout most of medical history, however, medical writing remained something less than methodical, describing illnesses, procedures, and "cures" according to the dictates of medical experience, with little concern for carefully designed controls and conclusive statistical analysis. But in the 19th century, a Hungarian trainee in a Viennese hospital produced a piece of medical writing that, in many ways, might be read as a harbinger of the modern medical journal. Although not the first of its kind, Ignaz Semmelweis's The Etiology, Concept and Prophylaxis of Childbed Fever is an inspiring piece of medical research and writing, a celebration of intellectual discovery and the dissemination of medical knowledge for the public good.

In his work at the maternity hospital, Semmelweis noted the high death rate of women during childbirth. Historians report that Semmelweis's research into the causes of childbed fever was sparked by his hearing "the too-frequent ringing of a little bell as the priest came to give last rites to a dying mother." (1) Semmelweis noticed further that the rate of death was higher among women who actually delivered in the hospital than among those who had given birth at home with the help of a midwife or en route to the hospital. The finding seemed paradoxical, because women who gave birth outside the hospital were often met with inconveniences and dangers unknown to the patients of the maternity clinic:

> being delivered by a midwife, then immediately having to arise, walk down many flights of stairs to the waiting carriage, travel in all weather conditions and over horribly rough pavement to the maternity hospital, and there having to climb up another flight of stairs. For those who really gave birth on the street, the conditions would have been even more difficult. (2)

Furthermore, Semmelweis observed that women who delivered prematurely also became ill less frequently. Similarly, no pattern or cause could be established from the positions of the women's beds in the clinic: sometimes one diseased individual would be surrounded by healthy patients; at other times, an entire row of patients would become ill. Nor could the disease be attributed to chilling when all the women along the north wall became ill, since the illness occurred just as often along the south wall and often spread to other sides of

the room.

Combining faithful observation with thoughtful analysis, Semmelweis provides even the modern reader with a dazzling example of the scientific method at work. After having culled his information, he asks himself certain crucial questions:

> What protected those who delivered outside the clinic from these destructive unknown endemic influences,

if they were indeed endemic, and

> [h]ow could these events be explained, given that the same patterns did not appear in the second clinic where one encountered the disease only sporadically? (3)

These questions became Semmelweis's springboards for further research and observation. Additional studies revealed that women who delivered prematurely or on the street virtually never became ill: based on this observation, Semmelweis was able to rule out endemic causes. With the knowledge that deaths by childbed fever occurred less frequently at a second clinic, Semmelweis determined to discontinue deliveries from the supine position in favor of the lateral at his clinic, "so that everything would be exactly as in the second clinic." (4) Firmly within the tradition of modern scientific analysis and writing, Semmelweis establishes a controlled environment within which to conduct his research.

Semmelweis's text extends, however, beyond the limits of pure science to provide a window into the socio-historical context relevant to the study. He begins, therefore, by revealing an important social policy affecting child-bearing practices of the time: when women arrived at the maternity hospital after having given birth in the street, admission to the clinic and the foundling home were provided free of charge. Alluding to an important sociological problem, Semmelweis explains that women often claimed, falsely, that the birth of their children had occurred unexpectedly on the way to the hospital in order to receive free care. Thus, Semmelweis draws the important distinction between the two types of "street births", births that actually occurred in the street, often under unfavorable conditions, and those that occurred, safely and hygienically, in the home. Both groups of mothers showed a lower death rate than those who delivered in the hospital, suggesting that the illness was somehow linked to the hospital itself. Thus, Semmelweis's awareness of social circumstances was instrumental to his eventual unraveling of the childbed-fever mystery.

More significant even than the awareness of social issues, however, was a different and more general kind of awareness. Frustrated by his inability to find the cause of the high occurrence of childbed fever in the clinic, and saddened by the loss of so many mothers, Semmelweis writes,

> Everything was in question; everything seemed inexplicable; everything was doubtful. Only the large number of deaths was an unquestionable reality. (5)

Thus, on March 2, 1847, Semmelweis departed for Venice with the hope that "the Venetian art treasures would revive [his] mind and spirits." (6) Knowing that he, in his depressed state, would be useless to both his research and his patients, Semmelweis maintained the balance and moderation recommended by Hippocrates and followed Hippocrates's early admonition that "the physician should be instructed in all subjects" (7), including the arts. The wisdom of Semmelweis's decision is then borne out by the "rejuvenated vigor" (8) with which he returns to his work and the rapid conclusion of the childbed fever story later in March.

With eyes and ears open to any new clues, Semmelweis soon discovered that Kolletschka, Professor of Forensic Medicine, had been pricked with a knife used during an autopsy. The professor contracted lymphangitis and phlebitis in the upper extremity, developed a metastasis in one eye, and eventually died of bilateral pleurisy, pericarditis, peritonitis, and meningitis. Semmelweis describes his unexpected discovery as

a kind of revelation:

> I could see clearly that the disease from which Kolletschka died was identical to that from which so many hundred maternity patients had also died. (9)

Autopsies confirmed Semmelweis's suspicion that the women and their newborns had died of the same disease that had killed the professor. Further analysis revealed that introduction of cadaverous particles into the vascular system had caused Kolletschka's death. The Viennese medical school's emphasis on anatomical study encouraged exploration of cadavers by professors and students: apparently, soap and water were not sufficient to remove the cadaverous particles from the hands of these individuals, resulting in the infection of those women with whom they came into contact during examination and delivery.

But Semmelweis's work does not end here. Upon discovery of the cause of the deaths, Semmelweis immediately replaced the soap-and-water wash with chlorina liquida, which destroyed the cadaverous particles adhering to the hands of the doctors. Soon, in an attempt to keep medical costs down, Semmelweis helped to establish a less expensive but highly effective chlorinated lime as the new standard. Semmelweis reports the favorable quantitative effects of the new protocol:

> In May 1847, during the second half of which chlorine washings were first introduced, 36 patients died--this was 12.24 percent of 294 deliveries. In the remaining seven months of 1847, the mortality rate was below that of the patients in the second clinic. (10)

Semmelweis continued, throughout his life, to crusade against the careless actions of European obstetricians.

Thus, Semmelweis's illuminating text contains all the essential features--data, discussion, and conclusion--of modern medical journal writing, if in a less structured and scientifically precise form. But its narrative structure and personal reflections remind us of that which modern medical journal writing rarely does: that scientific inquiry is a passionate struggle no less inspiring than the arts of Venice; that scientific truth is inextricably bound up with social and economic truth; and that medical research, particularly in this age of rapidly proliferating ethical dilemmas, can still strive for the physical health and social good of real and suffering people. Hence, Semmelweis's obscure Etiology, Concept and Prophylaxis of Childbed Fever is more than a tiny piece in the puzzle of medical history: it is a reminder of what medical journalism has been, what it has become, and what it ought not to lose.

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AUTHOR BIOGRAPHY

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