

Chapter Seven ~ Dr Ignaz Semmelweis and the Allgemeines Krankenhaus

Dr. Semmelweis: “Puerperal fever is caused by conveyance to the pregnant woman of putrid particles derived from living organisms, through the agency of the examining fingers, consequently must I confession that God only knows the number of women whom I have consigned prematurely to the grave.”



Dr. Ignaz Semmelweis is another exciting physician-scientist who devoted himself to ending the pandemics of childbirth septicemia mentioned earlier. Dr Semmelweis is a better-known historical figure than many other scientists that figured prominently in the coming of age story for medical science. I don't want to bore the people who read the “The Cry and the Covenant” (a historical novel published in 1949 which is an accurate account of Semmelweis' life) but not everybody knows the particular details. Since he has such a central place in our history of childbirth and medical science, I will provide a synopsis, starting with the “just the fact” version:

Dr. Ignaz Philippe Semmelweis was a 19th Austrian professor of obstetrics during the 1840s at the largest and most prestigious lying-in hospital in the world -- the *Allgemeines Krankenhaus*. In 1847, decades before Lister and Pasteur had shown that bacteria caused disease, Semmelweis established for the first time that childbirth septicemia in hospitalized maternity patient was a contagious infection spread primarily by the medical staff and students. In his own words Dr. Semmelweis concluded that: “puerperal fever is caused by the examining physician himself, by the manual introduction of cadaveric particles into bruised genitalia”.

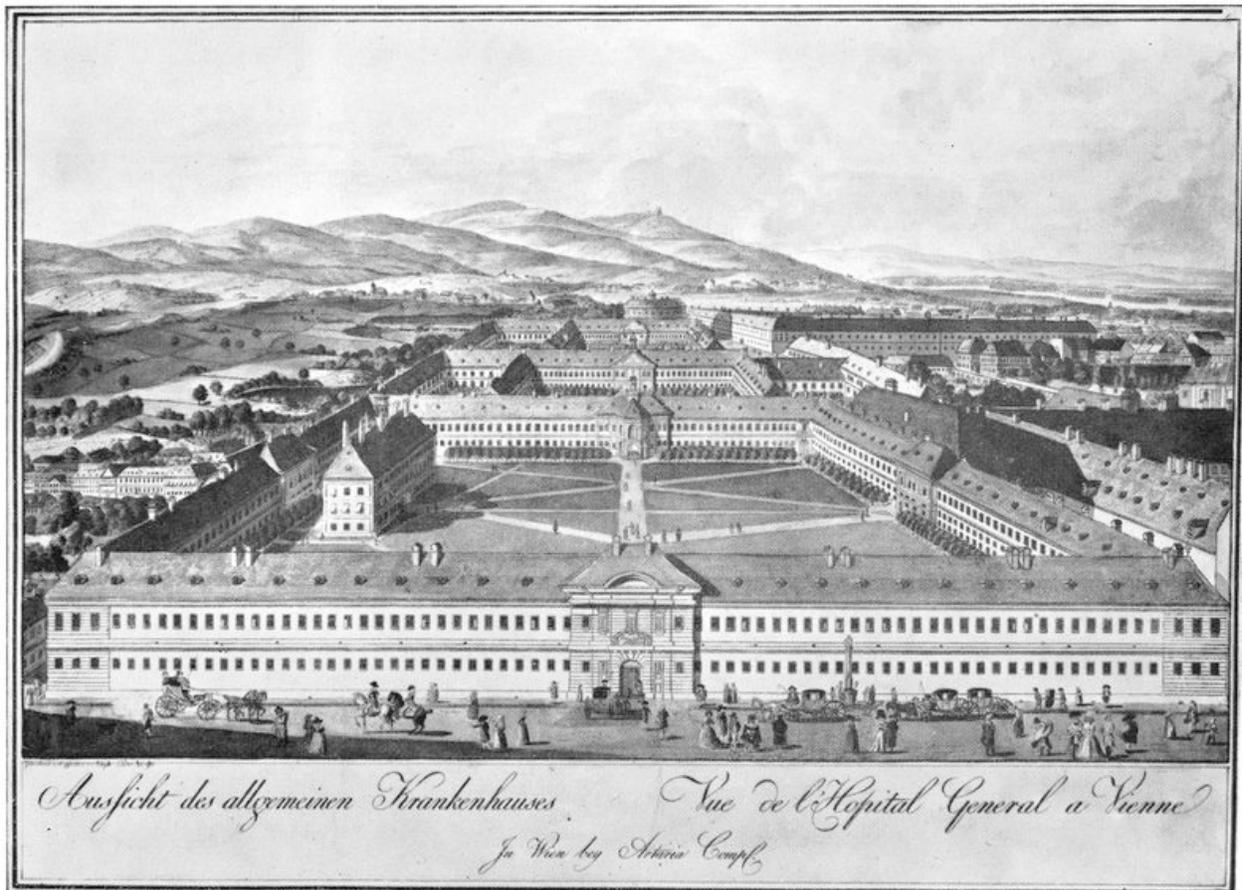
History remembers Dr. Semmelweis for having scientifically established the iatrogenic nature of puerperal sepsis, for developing effective methods to stop the cycle of contagion between the medical staff and their labor patients (hand washing in chlorinated lime water!) and for ultimately going crazy when he could not get his professional colleagues to acknowledge the nature of the problem or use the simple remedies (hand washing in chlorinated lime water!) that prevented these tragic and unnecessary deaths that rivaled the 20th century holocaust in sheer numbers.

A modern-day biography describes Dr Semmelweis as “...one of the most prominent medical figures of his time. His discovery concerning the aetiology and prevention of puerperal fever was a brilliant example of fact-finding, meaningful statistical analysis, and keen inductive reasoning. The highly successful prophylactic hand washings made him a pioneer in antisepsis during the pre-bacteriological era in spite of deliberate opposition and uninformed resistance.” This bio includes a tongue-in-cheek definition of “*The Semmelweis' reflex*” as “...behavior found among primates and larval hominids on undeveloped planets, in which a discovery of important scientific fact is punished rather than rewarded.” [www.whonamedit.com/doctor.cfm/354]

Now for the back story of Dr Semmelweis, Vienna's landmark hospital known as the *Allgemeines Krankenhaus*, its medical school professors, the students who were unwittingly ferried death from the autopsy room to the vagina of healthy labor patients and the unlucky mothers that paid the ultimate price for giving birth on the wrong side of history:

The Allgemeines Krankenhaus – poorhouse and hospital extraordinaire

Vienna's famous *Allgemeines Krankenhaus* (or AKH) was the clinical training site for medical students from the University of Vienna's medical school and Semmelweis' alma mater. The Vienna general hospital was a huge medical complex that occupied a whole city block and was the largest and most comprehensive medical facility in the world at that time. It was capable of housing hundreds of maternity patients at a time and delivered more than 3,000 babies a year. The old AKH, like the Hotel Dieu in Paris, is an icon of the original concept of a 'hospital' as a place of hospitality for the poor and disadvantaged, which only later became associated with medical education and treatment. In fact, the old Allgemeines Krankenhaus should be thought of as a city within a city, as this lithograph from the complex of the 1700s demonstrates.



The original AKH goes back to the end of the second Viennese-Turkish war in 1686, when Dr. Johann Franckh donated his properties for a military hospital to house the disabled veterans. While history books use the adjective 'hospital', the operative verb was 'to house'. Unfortunately, the Krankenhaus (Frank's house) was without funds, so the soldiers and their families were quartered in a building previously used to quarantine patients during epidemics. Seven years later, Emperor Leopold I established the first large hospitality complex, more properly called a 'poorhouse', which provided shelter and services to wards of the state. When the first ward was finished, it housed 1042 inhabitants, a number that grew to over 1700 during the next thirty years.

Then in 1726 another wealthy aristocrat, Baron von Thavonat, willed his possessions upon

his death to the disabled soldiers at the AKH. Due to his beneficence, the widows' yard (a ward surrounding a huge enclosed courtyard) and the patient's yard were both constructed and a food court and economic center for craftsmen was established. By 1774, a student's yard and the House Supervisor's yard had been added. Inhabitants of each ward were required to wear their own distinctive uniforms and were given individual copper tokens, which could be redeemed at the bakers and butchers complex and restaurants. Fifty years later, an adjacent cemetery was appropriated to make room for the 8th and 9th wards. This finished off the construction of the old AKH as a poorhouse on a truly grand scale.

In 1783, Emperor Joseph II visited the sprawling complex and decreed that a 'modern' hospital – a place specially organized to treat the ill and educate medical students – be constructed on the ground of the old AKH. It was designed by the Emperor's personal physician, Professor Joseph Quarin, who later became the director of the Vienna General Hospital. He used a general hospital plan, which separated pregnant women, orphaned infants and the mentally ill from the great swath of generally ill or injured patients. Those falling in these well recognized categories were cared for in attached buildings: the Gebärhaus (the birth house), the Findelhaus (a foundling house for orphaned and abandoned babies), and the Narrenturm, which was the first special building to accommodate mentally-ill patients.

On August 16, 1784, the new hospital opened. This marked the middle phase of the Allgemeines Krankenhaus, which for the next 75 years included the original wards of its poorhouse, the general hospital, the Gebärhaus, the Findelhaus, the Narrenturm and the medical school, all together in one huge complex that occupied a large part of the city of Vienna. The Viennese medical school has been located on the grounds of the old AKH as part of the University campus for two centuries. Like the old AKH itself, the University at Vienna had a long and influential history, having been established in 1365. It had a doctoral-level university modeled on the University of Paris since 1385. It gets to claim Sigmund Freud, Wilhelm Reich and Bruno Bettelheim as distinguished alumni.

In addition to sheer size of the old AKH, the Viennese Medical School enjoyed its own distinction by being one of the first medical research centers in the 19th century. The AKH's official history identifies Dr. Ignaz Semmelweis as one of its most distinguished graduates. They describe Semmelweis' important discovery of the etiology and prevention of puerperal sepsis very modestly, calling it "his observations on hygiene".

The Viennese Medical School's other claim to world-class fame was the work of Dr. Karl Landsteiner, who graduated in 1891. Dr. Landsteiner discovered blood types while at the AKH, and later developed a process to classify human blood into the now well-known A, B, AB, and O groups. He was able to demonstrate that if people with type O blood were transfused with blood from a person belonging to the A, B or AB blood group, they suffered a catastrophic destruction of new blood cells that resulted in shock, jaundice or death. For this important discovery, he received the Nobel Prize for Physiology in 1930.

Later in his life, after moving to the US and working at the Rockefeller Institute for Medical Research in New York City in 1937, he and another scientist (Dr. Wiener) collaborated on a study of bleeding in the newborn and discovered the Rh-factor in blood. Originally found in the blood of Rhesus monkeys, Rh status is important information for childbearing women. If an Rh-negative woman is carrying a baby whose father is Rh-positive, antibodies are triggered and build up during the pregnancy. If she becomes pregnant again, the next and all subsequent fetuses

are at risk for erythroblastosis fetalis, a potentially fatal disease in which the baby's red blood cells break open, causing intense jaundice and other problems. After several pregnancies, this process can become lethal to an unborn or newborn baby. Identifying the exact cause of this mysterious disease of the newborn eventually led to dramatically improved safety for Rh-negative mothers, who now are given Rhogam after every birth to greatly diminish or eliminate this affect in a subsequent pregnancy.

Today the Allgemeines Krankenhaus is still an important medical institution. The new **Vienna General Hospital** is the largest in Austria and one of the top 30 hospitals worldwide. At 279-feet high, it is one of the tallest hospital buildings in the world. The new AKH building project was started in 1957. Like the old general hospital built two hundred years before, the replacement was also a grand edifice -- a big central hospital with two large wings 22 floors high. It is the historic and present site of the Medical University of Vienna campus and clinical teaching site, with 11,000 students enrolled. In 2005, the land and buildings for the hospital and medical school were valued to be worth \$1,825 billion dollars. It has a total 2,199 patient beds, with an in-patient census of nearly 99,000 patients every year, and half million out-patient visits. It boasts 62 ambulances, 51 operating theatres, 49 Clinical Departments and 21 intensive care units. In 2005 there were 46,466 operations, 2,393 births, 1,521 autopsies and 1,403 deaths. The new AKH even has its own subway station (#U6 Michelbeuern) that connects to the public transport network, a real necessity for its nearly 9000 employees. This includes 2,832 nurses, 1,600 doctors, 1,348 cooking and cleaning staff, 1,133 technical staff managers, 332 medics, 159 pharmacists, chemists, physicists and 34 midwives.

The AKH in Semmelweis' Day

One of the most distinctive aspect of the *Allgemeines Krankenhaus* in Dr Semmelweis' day were the two wings of the hospital that were maternity wards which provided free obstetrical services to indigent women and single mothers. These wings were known as the First and Second Divisions and differed only in that the First Division provided clinical experience for medical students and the Second Division was devoted to the training of midwives.

Between 1841 and 1846, 2,000 women and nearly the same number of babies died in the First Division -- the medical school wards-- of the AKH. That meant 700 new mothers (and their babies) died each year from childbirth septicemia, an average of *two* a day. The director of obstetrics at the Allgemeines Krankenhaus had a list of 39 implausible 'reasons,' such as a draft of cold air, bad air, milk fever, errors in the mother's diet, maternal emotions that suppressed the flow of the lochia (normal bleeding after the birth) and of course, the 'unstable' condition of women. What these improbable explanations had in common was that each was untreatable and /or unpreventable. This unfortunately absolved the professors of obstetrics from any responsibility to search for a cause or a cure, while allowing them to think of themselves as saving women from Mother Nature' viciously defective biology. For a variety of different reasons, classical practice of obstetrics in the 18th and 19th century charity hospitals of Western Europe was fundamentally iatrogenic, although its practitioners were, for the most part, innocent of that knowledge.

Dr. Semmelweis was deeply disturbed by what he saw as the twin evils of the high mortality rate and the cavalier attitude of the other obstetrical professors. He did not share this fatalistic attitude and instead began to actively search for the reason why women who gave birth in the

medical school division of his hospital died in great number, while women who gave birth in the Second Division or at home did not. This huge disparity was even true for women who gave birth precipitously on the steps of hospital before any medical care could be provided.

In an era before the invention of sterile exam gloves, Dr. Semmelweis questioned the traditional practice of doing sequential vaginal exams on healthy laboring women by obstetrical professors and their medical students who had not washed and disinfected their hands between the autopsy room and the labor ward or between each of the laboring women. As an assistant physician, he had been a professor in the department of midwifery and knew that midwifery students in the second division did not come in contact with corpses and did not do vaginal examinations.

During the 18th and 19th centuries, five to fifty percent of maternity patients (both mother and baby) died from haemolytic septicemia in the teaching hospitals of Europe, a fate which did not befall women who had their babies at home. According to historical records, the all time worst epidemic of institutional contagion occurred at the University of Jena, when not a single mother left the hospital alive for four years in a row. [duplicated elsewhere – delete one or other]

Semmelweis was not the only obstetrician of this era to question these obviously harmful practices. Other knowledgeable people, including physicians and midwives, were also unwilling to settle for superstitious explanations that blamed fatal epidemics of childbed fever on everyone and everything else other than the real culprit -- poor obstetrical practices. Over the course of the previous century a small but substantial number of astute physicians all over the world -- Doctors White in England, Dr. Gordon in Scotland, Dr. Cederskjöld in Sweden and our own Dr. Oliver Wendell Holmes in Boston had all observed, studied and warned of the iatrogenic nature of childbed fever. In 1843 Dr. Holmes' paper had been published in the *New England Journal of Medicine and Surgery*, entitled 'The Contagiousness of Puerperal Fever'. They all said the same thing – unsafe practices used by doctors were the main cause of the epidemics, therefore, only doctors could stop them. To do that, doctors had to change their behavior. At the top of the list was disinfecting the hands between autopsy room and labor ward.

Dr. Semmelweis agreed with Doctors White and Gordon that the disease was often transmitted, via an unknown agent, by both physicians and nurses. Unfortunately, these life saving ideas were considered radical, ridiculed and dismissed as absurd by those who thought it inconceivable that the healing hands a physician (or his instruments or agents) could ever, under any circumstances, be a vector for a contagious fatal illness. However, evidence supporting for the iatrogenic nature of puerperal sepsis was easy to find. In places that midwives (who did not use instruments or perform autopsies) managed normal birth instead of doctors (who did) and where autopsies were not being done by the same practitioners who attended deliveries, repeated virulent epidemics of puerperal fever were blessedly absent.

The clash between the educational needs of medical students and their patients

The big problem for obstetrical professors was that post mortem dissections of women who died from puerperal sepsis provided extremely important educational opportunities that (in general) advanced medical knowledge. A topnotch medical education required students to perform postmortem exams after the death of any maternity patient as a crucial aspect of learning more

about these fatal complications. Obviously such information was a necessary first step to developing ways to prevent or successfully treat pregnancy and birth complications. Cadavers from the autopsy lab were also useful for demonstrating the mechanics of childbirth and as a way for students to practice and perfect their use of obstetrical instruments, such as forceps and fetal destruction operations.

An alternative to the widespread use of cadavers for teaching was a biologically safe mannequin developed by a famous French midwife in the mid-18th century. Its purpose was to teach midwifery skills to student midwives and instrumental and manipulative deliveries to medical students and country doctors. Madame du Coudray was the inventor and maker of these life-size teaching manikins, each of which had an anatomically correct pelvis, a pregnant uterus occupied by a realistic fetal doll, fake amniotic fluid, placenta and umbilical cord and access to uterine contents thru a working genital tract. According to existing records, it was even possible to simulate a postpartum hemorrhage with Madame du Cordray's famous manikins, one of which still exists and is reported to be on display in a museum somewhere in France. [Madame du Cordray –

The King's Midwife] Madame du Courdray began her mission when Louis XV commissioned her to educate midwives and physicians in safer practices so as to save more babies for the King's army. The King provided her with a yearly stipend of 8,000 livres – equal to that of a decorated military general – enabling her and her small staff to travel the French countryside by stagecoach. She stopped in every town and village, where she organized classes for midwifery students and local doctors, using her famous textbook, the *Abrege de l'art des accouchements* (1759) and her obstetrical mannequin as her principal teaching aid. It is recorded that du Coudray taught 10,000 students over a thirty-year period between 1759 and 1789.

Unfortunately, the use of bio-safe teaching mannequins were not popular in the rest of Europe. As dissection became an increasingly important part of medical school education, they were replaced by the bio-hazardous cadavers of women who died in childbirth. The assumption was simply that cadavers represented a superior teaching resource and would therefore result in a superior medical education. Each cadaver used for teaching purposes was severed in half at the waist, the abdominal viscera removed and the uterus dissected out. This was to prepare the hollowed out lower half of the body to receive a recently deceased newborn, which was placed inside the pelvis for teaching purposes. By passing a series of dead babies down thru the disarticulated body of a female cadaver, obstetrical professors could control the learning experience for their medical students. It also permitted students to practice doing vaginal exams, determine fetal lie and position, apply obstetrical forceps, carry out fetal destructive operations and learn lifesaving maneuvers for obstructed births such as podalic version (turning the baby and pulling it out by its feet).

Nonetheless, the use of cadavers to acquire these important and even potentially lifesaving skill came at an awful price, as it virtually guaranteed that highly contaminated organic material would be carried into the labor wards by students fresh from the dissection lab. Dr. Semmelweis came to believe that purulent organic material from corpses carried under the fingernails of doctors and medical students was the source of the fatal puerperal sepsis causing the death of so many newly delivered women and their babies.

To test out his theory that kindbettfeiber (kind-bett-fieber or child-bed-fever) was connected to postmortem exams, Semmelweis required his students to disinfect their hands with

chlorinated lime each time they handled a cadaver. To his astonishment, this cut the mortality rate to a quarter of what it was before. But in spite of these precautions, a small steady trickle of women continued to get sick and die. Then Semmelweis realized that the source of contagion was not only of bodies of women who died but that bacteria could be carried from one living person to another. Dr Semmelweis tightened the rules, requiring that students disinfect their hands before each vaginal exam. Like a sudden overnight miracle, maternal deaths in his institution all but disappeared. His method of investigation was flawless, the data overwhelming, he was sure of his conclusions, he was emboldened to put these theories into practice.

With his hypothesis confirmed, Dr. Semmelweis introduced prophylactic hand washing in a weak chlorine solution and to insisted that everyone, even the other professors and graduate physicians, use these precautions. In the eight months between April and December of 1847, maternal deaths in his institution fell from 18% (one out of six) to 0.2% (one out of 200). Using scientific methods, Dr Semmelweis proved that purulent organic material was directly responsible for the epidemics of kindbettfeiber -- fatal childbirth septicemia. Unfortunately, most obstetricians of the day rejected the idea that kindbettfeiber (or any other complication) could possibly be caused by poor hygiene or faulty medical practices.

Dr. Semmelweis' simple but effective solution was ignored and ridiculed by his contemporaries, who could not wrap their minds around something so unglamorous and straightforward as disinfecting their hands. As a matter of principle, they believed that it was impossible for the 'healing hands' of a gentleman-physician to ever be the vector of a fatal disease. Like people everywhere who are suddenly asked to change their thinking and their behavior, obstetricians in Semmelweis' day were either disinterested or hostile to these ideas. Had it been otherwise, they would have to acknowledge their personal responsibility for many maternal deaths, an obviously distressing thought, one that Dr Semmelweis' himself had a hard time accepting. But despite the "deliberate opposition and uninformed resistance", Semmelweis devoted the rest of his career to teaching and preaching the use of asepsis principles in maternity care to prevent unnecessary maternal deaths.

The medical profession did not finally acknowledge the role of contagion as spread by the medical staff until Louis Pasteur established the central role of microbes in causing illness and infection in the 1864. Only after Pasteur established the direct link between the specific bacteria *Streptococcus pyogenes* in 1881, was the iatrogenic nature of puerperal sepsis widely (and publicly!) acknowledged. But this was no help to Dr. Semmelweis during his lifetime. Overwhelming opposition by his colleagues and ridiculed by the director of the obstetrical department, it was easy to discredit him. Within a year of his great triumph, he was forced to leave the hospital. Unable to find another prestigious position, he finally had to take job as professor of midwifery in a small midwifery school in 1855.

While his friends and colleagues urged him to publish his research, he believed his ideas should be enthusiastically embraced by the entire obstetrical profession on their merits alone. After 13 years of resisting, he finally wrote *The Etiology, and the Idea of Kindbettfiebers Prophylaxis*, which was published 1861. Predictably, only a few of his contemporaries were receptive, while the majority continued to believe that hygienic regimes were incompatible with the existing theories about the causes of illness. However, historians also fault Dr. Semmelweis for

being long on umbrage and short on tack. His main strategy for changing these iatrogenic practices was to assume that the obvious superiority of his discovery needed no further explanation.

For his trouble, Dr. Semmelweis lost his prestigious post in Vienna's most famous hospital, lost his reputation and eventually his profession. In the end he was driven mad by guilt and his inability to "make them listen". At the age of 47, a mere 21 years after receiving his medical degree, he died in an insane asylum, leaving behind a wife and several children. At the time of his death in 1864, latex exam gloves, sterilization and antibiotics still had not been invented. The poorest of the poor – homeless women, widows, prostitutes and petty criminals without family or other resources – still had no choice but to become temporary wards of the state, housed and delivered in the 'lying-in' wards of charity hospitals. As teaching cases for medical students, they were still being systematically exposed to virulent bacteria. They still died in droves of childbed fever.

When contemplating Dr Semmelweis' story, it's useful to note that the idea of microbial sterility has only been a part of modern medicine for a *mere hundred and fifty years*. It was not until the discovery of anesthesia in the 1840s to control the extraordinary pain of surgery and 40 years later, the germ theory of disease and resulting aseptic and sterile surgical techniques to prevent the infection, that surgery became a reasonably effective form of medical treatment.

A Scottish Professor Speaks Up about the Controversial Role of Clinical Education

The decades between 1865 and 1885 were a turbulent time of transition, as the pre-microbial ideas were passing away, while the new germ theory was gaining acceptance but still, it was just a *theory*. Going from the drawing board to practical application was an enormous challenge for medical professionals. Except for Lister's principle of aseptic surgery and the pasteurization of milk, there was still no widespread application of these new principles, no universal agreement on techniques, no "standards of practice" to follow. For the public, there was great promise and raised expectation of 'cures'. This "up side" of science came with the introduction, for the first time, of the concept of iatrogenic harm as a systematic aspect of medical practice. For the medical profession, it was both an exciting and difficult time, as they debated these theories among themselves and tried to figure out how best to implement them. Obviously the bar had been raised and it was now up to them to literally invent new ways of doing things. In the mean time, it was a big mess. In 1881, a professor of obstetrics from Edinburgh, Scotland lamented the situation in his own maternity hospital:

"...maternal deaths or deaths during childbed – by which is meant death occurring within four weeks after delivery, -- have been shown to be striking in their frequency" ... "The present Maternity Hospital, being a necessity, and puerperal fever having been shown to exist there, and to have been the direct cause of death in 1 out of every 32 women "

The high maternal-infant mortality associated with reoccurring hospital epidemics spurred obstetricians to discuss among themselves the much lower infection rate in "private practice" (women attended in their own homes). A few even wrote academic papers published in professional journals on the disparity between hospital and private practice obstetrics, describing the controversy as one "*..of home versus hospital practice and of the greatly increased mortality of hospital as compared with home*". A couple of influential leaders suggested moving normal

childbirth out of the hospital and back into the mother's home as a strategy to eliminate the epidemics of puerperal sepsis.

In a paper published by the Edinburgh Obstetrical Society in 1881 about the use of aseptic techniques in childbirth, the same professor quoted above wrote that: "... the mere aggregation of lying-in women [in hospitals] is itself a cause of danger". He went on to say:

"What I believe to have been the origin of the disease, [is the] the want of a separate mortuary and the performance of post-mortem examinations in the hospital. Since that report, the fault has been remedied and the hospital thoroughly and repeatedly disinfected. Notwithstanding all this, the deaths from puerperal fever have continued.

Yet during that period there has not been recorded a single case of death from a similar cause in the extern practice [i.e., women delivered at home by the hospital's interns]... although the births at ... home are double, amounting to 625, and the general death rate is only 1 in 156 [compared to 1 in 32 for the Edinburgh Maternity Hospital].

I speak of **prevention rather than cure** because the experience of most ...of us who have had to deal with a pronounced case of puerperal fever is that ... we are **nearly powerless** or at least not in a position to rely with certainty of the efficacy of any of the means employed [i.e., **no** effective treatment]."

However, charity hospitals had become an irreplaceable source of patients as teaching cases and a model of efficiency for medical schools long before the 1880s. Doctors were keenly aware of the educational value of clinical training, which of course meant clinical material. Access to sufficient quantity of clinical 'material' was exceeding difficult when patients were widely dispersed in their own homes. It meant that obstetrical professors and medical students would lose value time traveling back and forth to each mother's house to individually manage each labor and birth, thus reducing the total number of cases and, in their estimation, the overall quality of their clinical education. An influential 20th century obstetrician put an even finer point on the need for large numbers: "*The paucity of material [i.e. teaching cases] renders it probable that years may elapse before certain complications of pregnancy and labor will be observed to the great detriment of the student.*" [?] Check citation – believe it is Dr. J. Whitridge Williams – 1911]

Despite the high mortality associated with the hospitalization of maternity patients, the conclusion arrived at by medical professionals was that hospital birth was a necessity, as it was the only place for indigent and single women to receive lying-in services and the only place that could provide the high volume of teaching cases necessary for medical students to receive the 'proper' clinical training.

"This brings us back to the old question long ago worked out by Sir J Simpson, Evory Kennedy and others, **of home versus hospital practice and of the greatly increased mortality of hospital as compared with home.**

... maternity hospitals must exist, as much for the benefit of women at a time when they most need shelter and assistance, as for the clinical instruction which the medical **student can receive there and there only.**

“It must be borne in mind that the majority of the intern cases [delivery in the hospital] are **single women who have been seduced**, and who, apart from their mental condition, ... have, previous to admission, been in straitened circumstances and badly nourished, and are ... *especially liable* to be quickly and gravely affected by any septic influence under which they may be brought.” [emphasis added]

Institutionalizing medical education was a core element in developing the modern clinical practice of medicine as a scientific discipline. Providing lodging and care during the lying-in period was a profoundly humane act of a civil society. But in the pre-microbial era, the price for ‘free’ obstetrical care could be very steep for pregnant women. Even in the best institutions, an average of 1 out of every 128 childbearing women died. In the ‘average’ charity hospital, the number of maternal deaths was more like 1 out of 30 and sometimes, for months at a time, the number rose to 1 out of 3 mothers. Like the labor and delivery room that I trained in as a student nurse in the 1960s, the era of the charity hospital and the use of charity patients as clinical material was a time and place that trapped both normal and abnormal birth on the wrong side of history.