

"The Contagiousness of Puerperal Fever" (1843), by Oliver Wendell Holmes [1]

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In 1843, physician [Oliver Wendell Holmes](#) [2] wrote and published "The Contagiousness of Puerperal Fever," an essay about puerperal fever, a disease that occurs mainly as a result of bacterial infection in the uterine tract of women after giving birth or undergoing an [abortion](#) [3]. In the essay, Holmes argues that puerperal fever is spread through birth attendants like physicians and midwives who make contact with the disease and carry it from patient to patient. The article was published in *The New England Quarterly Journal of Medicine and Surgery* in 1843. Holmes, who lived in Boston, Massachusetts, later republished his essay as a private publication in 1855 with a different title, "Puerperal Fever as a Private Pestilence." Holmes's essay was one of the first publications to present puerperal fever as a contagious disease and to discuss preventative measures to inhibit the spread of puerperal fever, which helped preserve the lives of pregnant women and their newborns.

During the 1800s, puerperal fever was widespread in Europe and a common cause of maternal death. Holmes began to research puerperal fever in 1842 after watching Walter Channing, an instructor at Harvard Medical School in Boston, Massachusetts, present about thirteen fatal cases of puerperal fever to the Boston Society for Medical Improvement. At the time, Holmes was a practicing physician in Boston. Holmes spent a year researching puerperal fever by going through case reports and other medical literature in Boston.

On 13 February 1843, Holmes presented his research to the Boston Society for Medical Improvement. In April, he published his research as an essay, "The Contagiousness of Puerperal Fever." According to Holmes, he intended for the essay to alert physicians and various medical staff to the fact that they could spread puerperal fever and that puerperal fever was contagious. At the time of the essay's publication, researchers couldn't explain the cause of the disease and physicians were unaware that they could be in part be responsible for the spread of the disease.

"The Contagiousness of Puerperal Fever" is divided into three untitled parts. In Part I, Holmes presents his overall thesis that puerperal fever is infectious and often spread by physicians. Holmes also analyses previous literature on puerperal fever. In Part II, Holmes provides evidence regarding the contagious nature of puerperal fever. He presents multiple cases in which patients, who were being treated by physicians who had been exposed to puerperal fever, died after giving birth. In his final section, Part III, Holmes outlines eight preventative measures for physicians and other medical staff to follow to prevent the spread of puerperal fever. Throughout his essay, Holmes includes quotations from physicians talking about cases of puerperal fever.

In Part I of the essay, Holmes discusses his purpose and also highlights the conclusions of previous research done on puerperal fever. He begins Part I by stating that it is important for physicians to consider that puerperal fever could pass from physician to patient, and that the conclusions of his essay could prevent further maternal deaths. Holmes lists the five points of his essay. In his first point, he states that he does not know if all forms of puerperal fever are equally contagious, so he will not address different forms throughout his essay, rather he discusses puerperal fever from a more general perspective. In the next two points, Holmes states that he will not discuss the exact modes of transmission of the disease or the exact causes. He then acknowledges that there are instances of lone cases of puerperal fever that do not end up spreading to other patients. In his final point, Holmes states that many women died of puerperal fever and that physicians and nurses had been blind to the fact that they may carry the disease.

In Part I of the essay, Holmes discusses the work of Alexander Gordon, a physician who wrote a 1795 book on the infectious nature of puerperal fever titled *A Treatise on the Epidemic Puerperal Fever of Aberdeen*. Holmes quotes Gordon as saying that he suspected he was carrying the disease to patients and that he could predict which patients would die of puerperal fever based on who attended to them. Holmes uses Gordon's words as evidence for his thesis of the contagiousness of puerperal fever. He cites work of other physicians including case reports and research papers, and medical cases for which all the patients of specific medical staff died of puerperal fever during a specific span of time. According to Holmes, the deaths of all the patients of one physician indicated that the physician was responsible for spreading the disease.

In Part II, Holmes outlines numerous cases of puerperal fever as evidence of the link between the spread of puerperal fever and the actions of the physicians in charge of the cases. In the section, Holmes explores cases for which a physician conducted an

autopsy on a patient who died of puerperal fever or other bacterial disease and then treated a pregnant woman after completing the autopsy. Holmes then reviews the case report of Charles Warrington, a physician in the United States. Warrington, after assisting in an autopsy of a patient who died of puerperal fever, delivered the infants of three women and attended two other patients. All five patients were diagnosed with puerperal fever and two died. From Warrington's report, Holmes concludes that autopsies played a role in the spread of puerperal fever. Holmes presents another case of a physician whose patients were dying of puerperal fever. In the case, two nurses who handled the bodies of the dead patients also died of erysipelas, a disease caused by a bacterial infection in the skin. The physician in charge of the cases had wounded himself during an autopsy of an older man who had died suddenly. Holmes argues that the physician had spread the erysipelas to the nurses, and Holmes connects erysipelas with puerperal fever. He argues that the physician had caused the pregnant patients to get puerperal fever because of the spread of the erysipelas.

Holmes continues Part II of his essay by examining cases of puerperal fever in which the physicians had not performed autopsies prior to attending to patients. He analyzes the cases to show that the spread of puerperal fever occurred drastically and in a specific amount of time. Holmes references a letter written to a colleague of his in which a physician discusses cases of puerperal fever that had occurred in his practice. The physician details how the cases of puerperal fever seemed to be confined to certain periods of time, occurring one after another. Holmes notes that most cases of puerperal fever spread in a short amount of time, and because they were usually confined to specific physicians, those physicians were responsible for spreading the disease.

In another case Holmes describes in Part II, puerperal fever was directly transferred from physician to patient. The physician, after conducting an examination of the body of a patient who died of puerperal fever, carried pelvic organs in his pocket to the classroom to teach students. He later aided in the delivery of a pregnant woman who died of puerperal fever. The physician also used the same forceps from the delivery the next day on another patient, who later died of puerperal fever. Holmes uses those cases to show a correlation between patient deaths and the actions of physicians. He states that after physicians conduct autopsies, they transfer the disease to the patients. He also concludes that there is a correlation between erysipelas, a bacterial skin infection, and puerperal fever and that puerperal fever may originate from erysipelas.

In Part III of "The Contagiousness of Puerperal Fever," Holmes outlines eight measures medical staff should take to prevent the spread of puerperal fever. He first states that the conclusions of his essay are meant to instruct physicians rather than criticize them. Following, Holmes presents his recommendations. He first recommends that physicians who plan on attending to pregnant women should not take part in autopsies on patients who died of puerperal fever. He then states that if they do attend an autopsy, they should properly clean themselves and wait a full day before attending to pregnant patients. Next, Holmes outlines what medical staff should do with singular cases of puerperal fever, emphasizing that physicians and staff must take precautions to prevent the spread of the disease. He does not specify the precautions, but mentions that a physician should let some time pass after attending to a patient with puerperal fever before attending to another patient. Holmes argues that if more than one patient of a physician's is diagnosed with puerperal fever, that physician should let a month pass before returning to practice. He goes on to state that if a physician has three closely connected puerperal fever cases, then that physician should be regarded as the reason for the spread of the disease. Finally, Holmes declares that widespread cases of puerperal fever under any physician should not be seen as a misfortune but as crime.

According to historian of science Lois Magner, Holmes's essay was not well received by the medical community in the 1840s. Obstetricians, including Charles D. Meigs, a physician of obstetrics and professor at Jefferson Medical College in Philadelphia, Pennsylvania, contended that Holmes's argument was flawed and referred to him as a sophomoric writer. At the time, many physicians said that widespread cases of puerperal fever were a result of misfortune and not the physicians' fault. Many obstetricians dismissed Holmes's work because he was not an obstetrician. In addition, the *New England Quarterly Journal of Medicine and Surgery*, in which Holmes published his essay, reached few doctors and stopped publishing new issues a year after the publication of Holmes's essay. Because of the criticism and lack of reach, Holmes's published another version of his essay in 1855 that included an additional introduction, in which he highlighted how his initial essay impacted the medical community. The second version of the essay, titled "Puerperal Fever as a Private Pestilence," also presented additional cases as evidence.

Despite the criticism Holmes's work received and its lack of reach, some physicians followed Holmes's recommendations. In 1852, James Copeland, a physician at Queen Charlotte's Lying-in Hospital in London, England, affirmed Holmes's conclusion in his book, *A Dictionary of Practical Medicine*. Holmes's work on puerperal fever was supported by the work of Ignaz Semmelweis, a physician at the [Vienna General Hospital](#) ^[4] in Vienna, Austria, who in 1847 made similar conclusions as Holmes, but also suggested that physicians properly wash their hands prior to and following attending patients.

"The Contagiousness of Puerperal Fever" was the one of the first compilations of evidence arguing that puerperal fever was an infectious disease that could be passed from physician to patient. Holmes and Semmelweis' work on the infectious nature of

puerperal fever enabled researchers to prevent and later cure puerperal fever, and the disease became almost nonexistent by 1960 in many parts of the world.

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