# The art of medicine

## John Snow: the making of a hero?

150 years ago last month, *The Lancet* published an obituary:

> "DR JOHN SNOW—This well-known physician died at noon on the 16th instant, at his house in Sackville-street, from an attack of apoplexy. His researches on chloroform and other anaesthetics were appreciated by the profession."

John Snow's death was sudden and early—he was only 45 years of age. Other obituaries and eulogies were more effusive. At the time of Snow's demise he was a successful anaesthetist whose expertise was widely sought by surgeons and patients, but his theory that cholera was spread through water was not broadly supported. Yet fast forward to the present and Snow has become an iconic figurehead across public health and epidemiology, as well as anaesthesia. The John Snow Society, founded in 1993 with around 1500 members worldwide, promotes his life and works, and seeks to "provide a communication network for epidemiologists and those trained in the Snow tradition throughout the world". The Society organises annual lectures at which members re-enact the removal of the pump handle during the eponymous 1854 cholera outbreak in Broad Street, Soho, London, UK. It also produces Snow memorabilia and the Society recently introduced a walk in the footsteps of "the medical detective" through the streets of Soho, concluding at the John Snow pub—itself a peculiar memorial since he practised temperance. So how has Snow been made a hero?

R G Snow

***John Snow*** **(1847) by Thomas Jones Barker**

Let us begin with a brief recap of his history. Yorkshire born and bred, the eldest of nine children, Snow's early life was distinguished by the singular success of his father, William Snow, who achieved a remarkable upward social mobility. At the time of John's birth, the family lived in North Street, within York's city walls and William was a labourer. Over the next decade or so William progressed through a succession of jobs and by 1832 had become a landowning farmer, subsequently moving to a farm on the outskirts of York. That he gave his children a basic education, which for Snow included Latin and Greek, was no easy achievement as the cost would have placed a strain on a tight family budget; but it provided Snow with an entrée to a medical apprenticeship that he served with William Hardcastle in Newcastle-Upon-Tyne. On completion and after a couple of assistant posts to family doctors, Snow set off for London where after 2 years of training he gained qualifications from the Royal College of Surgeons and the Society of Apothecaries. Then Snow bucked the trend. Rather than return to his native Yorkshire he nailed up his colours in Soho and spent the next 10 years researching topics such as respiration and gas chemistry, promoting his research through the medical society network, and scratching a living from a small general practice.

The opportunity to improve his fortunes arose in December, 1846, when news of American experiments with ether for surgical pain relief reached London. Snow grasped the invention with both hands. Within 6 months, he had established the scientific principles of the anaesthetic process, developed a growing practice, and written a short but well received book. Chloroform, discovered by Sir James Young Simpson in November, 1847, swiftly replaced ether in most parts of the world and Snow's research and practice continued to burgeon. From the late 1840s, his contribution was embedded in the history of the specialty and he still features large. But anaesthesia was not his only interest.

In 1849, after gathering evidence from the 1848 epidemic of cholera, Snow published a short pamphlet suggesting that water was the main vehicle of dissemination. His theory competed with many other explanations and was brusquely dismissed by most commentators. 5 years later, an outbreak in Broad Street, Soho, close to his home, provided the opportunity to gather fresh evidence. This research, together with the results of his investigations of the comparative incidence of cholera in homes supplied by two of London's water companies, formed his second

publication. *On the Mode of Communication of Cholera* (1855) was self-funded; only 56 copies were sold. That year Snow gave evidence to the Select Committee set up to gather evidence for the Nuisances Removal and Diseases Prevention Bill. "I believe that epidemic diseases are propagated by special animal poisons coming from diseased persons, and causing the same diseases to others… but that…ordinary decomposing animal matter, will not produce disease in the human subject", he replied to one of the questions. *The Lancet* was virulent in its condemnation:

> "The fact is that the well whence Dr Snow draws all sanitary truth is the main sewer. His specus, or den, is a drain. In riding his hobby very hard, he has fallen down through a gully-hole and has never since been able to get out again."

Snow's critics challenged the exclusivity of his theory and his refusal to engage with other explanations of cholera's spread. But after his death, from the 1860s onwards, Snow's theory gained momentum. In 1883, Robert Koch identified the cholera vibrio, and in 1890 John Simon, the first UK Medical Officer of Health, who had previously discounted Snow's theory, spoke of it as "the most important truth yet acquired" for the prevention of epidemic disease. Nevertheless, Snow remained largely unknown in epidemiology and public health until the 1930s when interest in his work was reignited by the republication of *On the Mode of Communication of Cholera*, by Wade Hampton Frost, the first professor of epidemiology at the Johns Hopkins School of Hygiene and Public Health in Baltimore, USA. Frost built a trajectory from the work of Girolamo Fracastoro, a 16th-century Italian physician and poet whose theory of contagion rested on ideas of "seeds of disease", to Snow's "nearly perfect model" study of cholera and thence to contemporary epidemiology. Snow's argument, claimed Frost, "has the permanence of a masterpiece in the ordering and analysis of a kind of evidence which enters at some stage and in some degree into every problem in epidemiology". From this point Snow became the exemplar of epidemiological thought and practice.

So what can we learn from these two tales? The first point to acknowledge is that Snow's history does have a natural dramatic undertow. He was a poor working-class boy who, by dint of hard work, ambition, and tenacity became a respected London anaesthetist and his best-known patient was, of course, Queen Victoria. He provides a fine example of Victorian achievement in the best Smilesian tradition. If his story inspires others to apply equal dedication to medicine and science then that is all to the good. His place in the history of anaesthesia is tethered to the roots of what he did, although at the time, his use of technology to administer anaesthetics was not shared by most doctors—they used a handkerchief or cloth with equally good results. More worrying is the depiction of Snow's cholera theory as a eureka moment of discovery when science shed its blinding light on past ignorance. We are in danger of misrepresenting and thus confusing our understandings of the past if we fail to take into account the nuances of 19th-century beliefs. Then, ideas on the spread of disease were not crudely polarised between contagionists like Snow, and others who believed disease spread through the miasma (bad air) emanating from organic waste on the streets. Rather, there was a complex discourse and, understandably, most doctors preferred to cover all the options. Late 19th-century reductions in mortality from cholera owed more to general improvements in water supplies than to Snow's theory.


**Street map of cholera deaths in Soho in 1853 from John Snow's *On the Mode of Communication of Cholera***

The emergence of Snow as the hero of epidemiology in the 1930s says more about interwar professional concerns than about early Victorian London. During the early 20th century, epidemiology was often seen as the poor relation of bacteriology. Frost sought to integrate epidemiology with the structures of public health, thereby establishing its importance. His enterprise required defining and constructing a clear identity for epidemiology. It is no surprise that Frost turned to history and chose Snow's work as a compelling example of the contribution epidemiology could make to society. The 150th anniversary of Snow's death will prompt celebrations of his work worldwide. But athough it is right to pay tribute to his contributions to medicine, we should also acknowledge the extent to which his work has been used to make simple tales from complex histories. Eureka moments can inspire, but they rarely sustain doctors who have to make decisions in conditions of uncertainty, without the bright light of retrospect.

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**Further reading**

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Waller J. Fabulous science: fact and fiction in the history of scientific discovery. Oxford: Oxford University Press, 2002.

The John Snow Society http://www.johnsnowsociety.org

Stephanie Snow is related to John Snow through marriage.