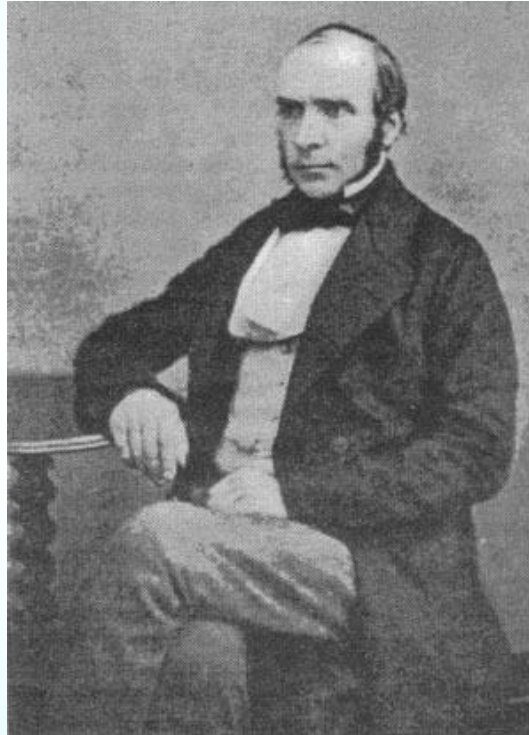
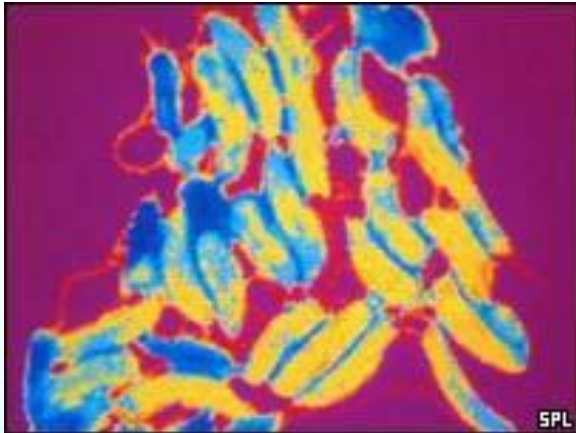


# Dr. John Snow



## The Father of Epidemiology

# The Early Years

- ┌ John Snow was born in York (England) on March 15th, 1813. He was the oldest of nine children.
- ┌ His father worked in a coal mine and even though the family was poor, his parents wanted John to have a good education.
- ┌ John was sent to a private school and then to work as an apprentice to Dr. Hardcastle when he was 14 years old.

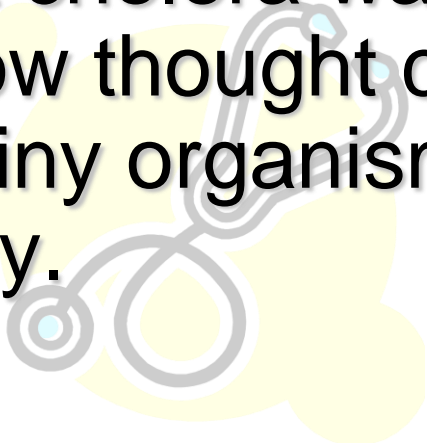
# The First Epidemic

- In the summer of 1831, when Snow was eighteen and in his fourth year as an apprentice, a cholera epidemic struck London.
- The disease had already killed hundreds of thousands of people in Europe.
- When the epidemic ended in February 1832, there had been 50,000 deaths in England.



# A Doctor at Last

- Over the next 16 years, Snow earned his PhD in medicine and became the leading expert in anesthesiology.
- He continued to research the cause of cholera epidemics.
- The most common belief at the time was that cholera was caused by miasmas but Dr. Snow thought cholera was actually caused by tiny organisms or germs getting into the body.



# A Second Epidemic

- In September of 1848, another outbreak of cholera occurred and Dr. Snow identified the first victim who died after being sick for only a few days.
- Dr. Snow talked to more people who were sick and discovered that all of them complained of “digestive problems” first.
- The epidemic lasted over two years. Dr. Snow continued to research the spread and source of cholera, but had no solid evidence for the presence of cholera germs.

- Dr. Snow tried to educate people on how he believed cholera was spread.
- In August of 1853 another epidemic of cholera broke out very suddenly in a neighbourhood 5 minutes from his home. Dr. Snow traced the water source to a pump on Broad Street.
- Using the number of people who became ill in the area of the Broad Street pump, Dr. Snow concluded that the water must be contaminated

# The Broad Street Pump

- He approached the Board of Guardians and pleaded with them to remove the pump handle. Even though they were skeptical, the handle was removed and the epidemic ended.
- The Board of Guardians asked for an inspection of the well and were informed that the well was not damaged and that no sewage was leaking into the well.
- Reverend Henry Whitehead worked with Dr. Snow to identify the source of the contamination and after further investigation, it was proven that sewage was leaking into the well.

# The End and the Beginning



John Snow died of a stroke on June 16, 1858, but his theory about the spread of cholera was still not accepted.

In 1854 Filippo Pacini discovered the bacteria that caused cholera.

Dr. Snow's theory was finally proven in 1884 when German microbiologist Robert Koch rediscovered, isolated, and cultured the cholera bacillus, *Vibrio cholerae*.

For his persistent efforts to determine how cholera was spread and for the statistical and mapping methods he initiated, John Snow is widely considered to be the father of epidemiology.

# What is Cholera?



The cholera bacteria

- It is a bacteria that lives in the digestive system of the organism (host) it is infecting.
- A person may get cholera by drinking water or eating food contaminated with the bacteria.
- The disease can spread rapidly in areas with poor or no treatment of sewage and drinking water.
- The symptoms of cholera are queasiness, stomachache, vomiting, and diarrhea. The infected person becomes dehydrated and can die if he/she does not receive treatment right away.

# Cholera Today

- Cholera is a preventable disease that is **very common** even today.
- The treatment for cholera is rehydration (giving the sick person lots fluids with special sugar and salt additives).
- With treatment, less than 1% of infected people die.
- Water source treatment including boiling water and superchlorinating the system should clear up any cholera contamination.

# What's the Big Deal!?

- Every year millions of people die because their water is unsafe to drink.
- In Canada, there are many communities that can't drink their tap water.
- Even with treatment sometimes the germs can get into our water and make us sick.
- We can't live without water!

# Resources

- <http://www.cdc.gov/cholera/index.html>
- <http://www.ph.ucla.edu/epi/snow/fatherofepidemiology.html>
- [http://newsimg.bbc.co.uk/media/images/40993000/jpg/\\_40993166\\_cholera203.jpg](http://newsimg.bbc.co.uk/media/images/40993000/jpg/_40993166_cholera203.jpg)