

INDUSTRIAL ERA MEDICINE 1750-1900s

The Industrial era was renowned for critical thinking & was considered the 'age of enlightenment.'

VACCINATION CASE STUDY:

1700s+, inoculations were used to prevent the spread of smallpox (which was rife in London, killing 35,000 in 1751 alone)

EDWARD JENNER infected James Phillip with cowpox after observing the immunity milkmaids seem to have from smallpox in 1796.

Edward's procedure was a success & Jenner's findings were published in 1798

Inoculators' livelihoods were threatened by Jenner and he faced opposition from skeptics who couldn't bare being injected with cowpox, despite its efficacy at preventing smallpox

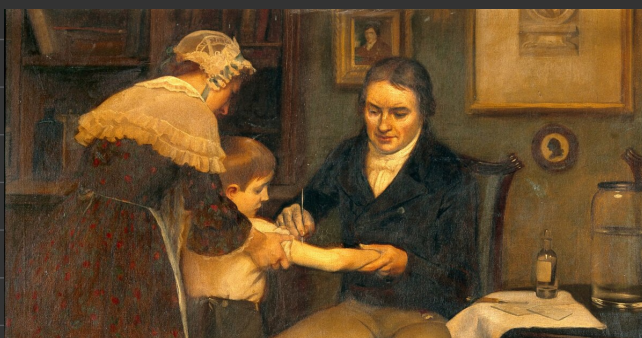
Parliament gave Jenner a £10,000 grant to open a vaccine clinic

1840= vaccine made compulsory for infants

1853= vaccine made compulsory for all in the UK

Jenner's vaccine contributed to the eradication of smallpox across the globe in the 1980s, announced by the WHO

Although the vaccine was effective and prevented brutal death from smallpox, there was no data to evidence how or why it worked so there was little immediate progress made in the era, but Jenner paved the way forward for modern epidemiology & pathology.



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GERM THEORY:

1800S: Spontaneous generation theory popularised (disease caused pathogens)

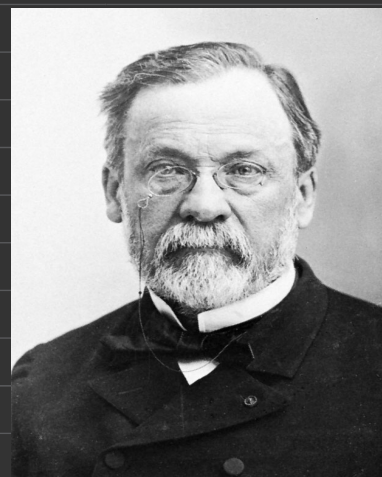
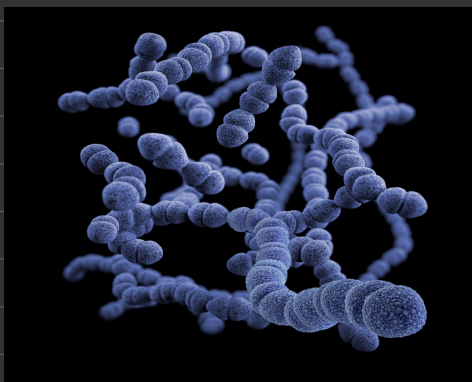
1857: Louis Pasteur investigated why beer decayed in a brewery, deducing that germs CAUSED disease (a closed flask maintained the freshness of alcohol, as opposed to an open one which enabled the decay of the beer)

1861= GERM THEORY coined, met with skepticism initially

Pasteur's findings had a PROFOUND impact on others in expanding on the study of pathology e.g. Robert Koch who went on to linking specific pathogens to diseases (anthrax in 1876, tuberculosis in 1882, cholera in 1883) & used agar jelly to culture microorganisms and stain them for easy observation under a microscope.

The Germ theory paved the way for Lister's aseptic surgery & credited John Snow's links between cholera & the Broadstreet pump, Soho, LDN.

Germ theory also lead to government involvement in public health upon connecting poor living conditions & disease together - Public health act of 1875 was drafted.



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FLORENCE NIGHTINGALE:

Tended to British soldiers during the Crimean War in 1853

She promoted hospital cleanliness e.g. via ventilation & good hygiene, bringing the death rate of soldiers (due to infection) down by 40%!!!

1859= 'Notes on Nursing' was published, £44,000 was raised to help train nurses

1916= 'Royal college of nurses' created

1919= Nurses registration act passed

Nightingale brought professionalism & discipline to the nursing career (typically written off as less important due to it being a female dominated sector), whilst empathising the importance of cleanliness in hospitals to cultivate a sterile environment.

MARY SEACOLE:

Volunteered to help in the Crimean war (despite gender & racial opposition)

Gained media attention & also stressed the significance of hospital cleanliness.



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ANAESTHETICS:

Opium & Rum were used pre-op in the 1700s to reduce surgical trauma from pain

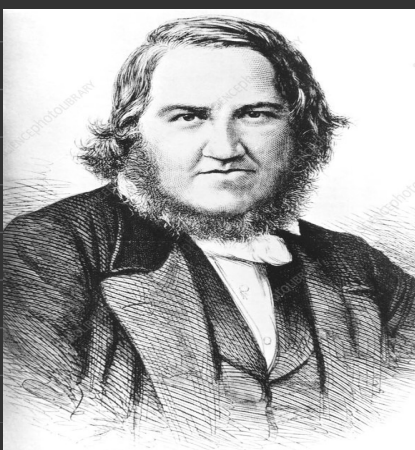
Simpson (a professor of midwifery) used Chloroform in 1847 as an effective alternative

1853- Queen Victoria used chloroform as a birth-aid in labour

Simpson's discovery helped significantly reduce surgical trauma from physical pain yet ironically increased the death rate.

Because surgeries were made longer in duration, infections from open wounds increased, leading to deaths from sepsis, marking the 'Black period' of surgery

When used in conjunction with Lister's antiseptics, anaesthetics were effective in operating rooms @ lowering death rates



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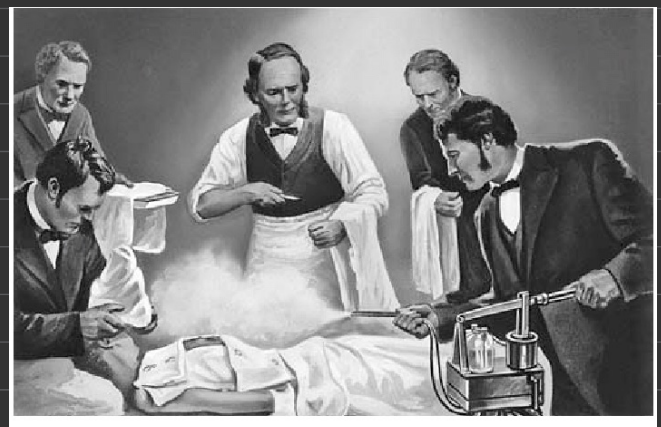
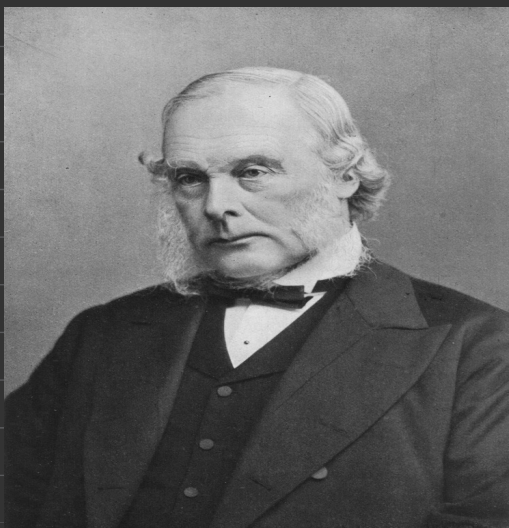
ANTISEPTICS:

1860s- Lister 1st used Carbolic acid in operating theatres to reduce deaths from infection

Bandages were seeped in carbolic acid & surgical instruments were sterilised, resulting in the death rate from infection halving!!!

Lister created 'aseptic surgery' which featured: the sterilisation of wounds, surgical instruments, the washing of a surgeon's hands after each patient & the changing of blood stained attire.

The rigorous sterilisation of operating theatres in killing pathogens accredited Pasteur's Germ Theory- showing a MAJOR shift in attitudes towards the causes of disease and the subsequent prevention of it.



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CHOLERA CASE STUDY:

Prior to the Germ Theory, privies were built above cesspits & sewage was dumped into the Thames = water supplies were contaminated

1831: Cholera reached the UK, resulting in 32,000 deaths

Miasma was the perceived cause of the outbreak so the councils regulated the burial of corpses

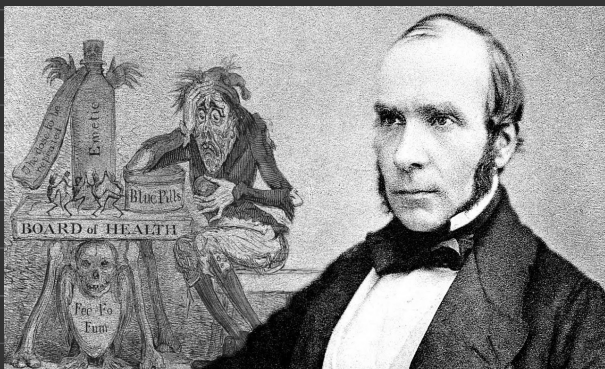
1854: JOHN SNOW used spot maps to trace the outbreak back to the Broadstreet pump, Soho, LDN.

1855: 'on the mode of communication of cholera' was published

Workers in a brewery who didn't consume the contaminated water weren't sick- this evidenced Snow's claims about the origins of the outbreak

The council eventually removed the handle from the water pump, which stopped the cholera outbreak!!!

Snow's findings outlined the necessity of government intervention in public health, facilitating the drafting of the Public Health Act of 1875 after the Germ theory proved CAUSATION.



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PUBLIC HEALTH ACT 1875:

Chadwick suggested a link between poor living conditions & disease

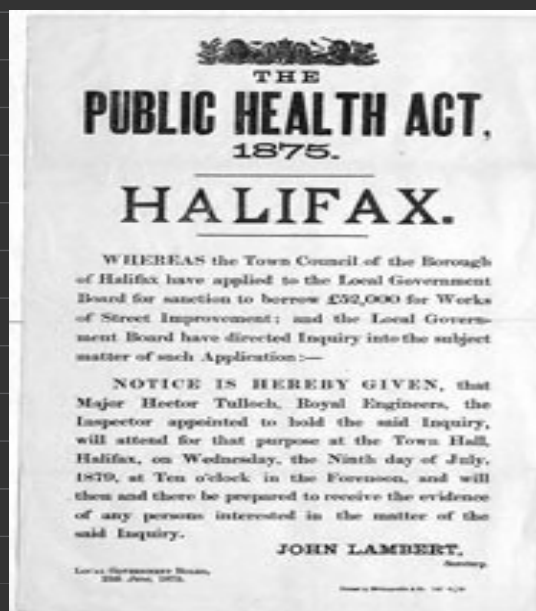
A Central board of health was set up & a new sewage system was created after the Great Stink of 1858

1867: A 2nd act was passed, allowing 1 million industrial workers (men) to vote after Dicken's & Hill's literature helped change public perception of the poor

1875: Public health inspectors were appointed, streets were cleaned, sewers were maintained, streets were lit to reduce crime

1876: Rivers pollution prevention act

PHA showed evident progress in government attitudes towards public health from the Middle Ages, the Laissez faire attitude was scraped & individuals highlighted the NEED for government policy to prevent ill health and death- neglected during plagues & cholera outbreaks.



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ANALYSIS:

The era saw a shift in government attitudes towards public health, the PHA 1875 showed an active responsibility for the health of the nation.

Individuals made rapid progress, upon building on each other's ideas to breed innovation.

Pasteur's Germ theory was a major breakthrough which led to antiseptics, agar jelly cultures, understanding WHY vaccines worked to develop more & reduced death rates from within operating theatres!

The era is infamous for its contributions to modern medicine and catalysed a lot of change by debunking fallacies e.g. spontaneous generation in the quest for scientific truth & discovery.

