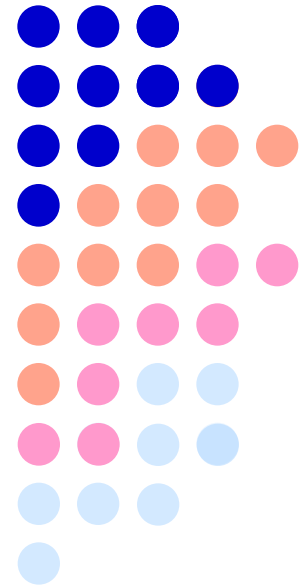
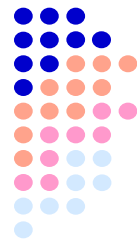


History of major advances in medicine, social medicine and hygiene

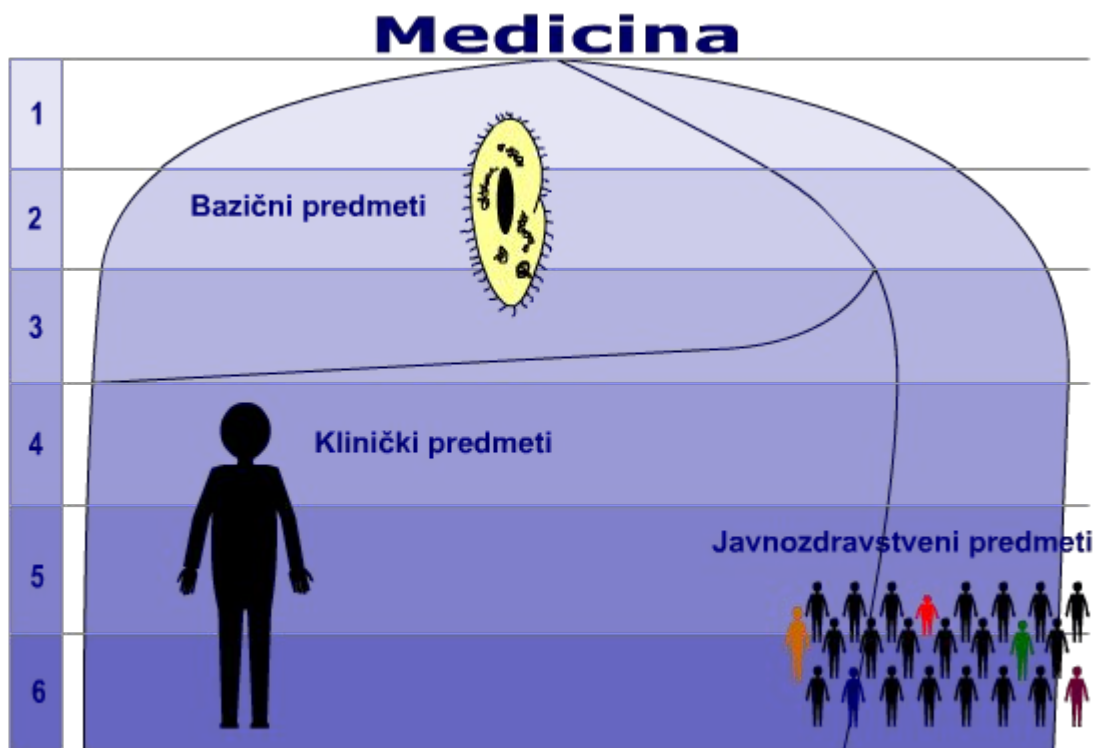
Ivana Kolčić, MD, PhD

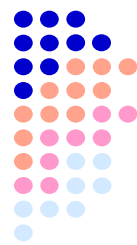


Medicine



Social medicine

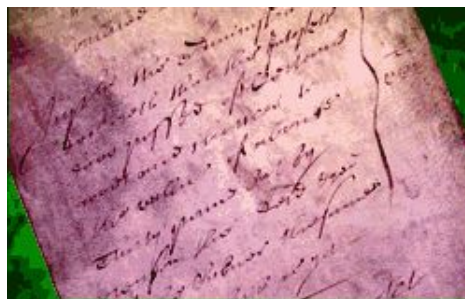




History of medicine - highlights

Social medicine

- epidemics – well known through all of the human history



- Until 16th century every disease in epidemic proportion = "*pestis*" or "*pestilentia*"

History of medicine - highlights

Social medicine

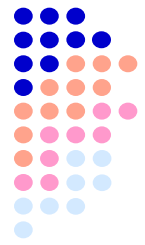


- **Bernard de Gordon** in 14th c. in "*Lilium medicinae*" describes communicable diseases like: leprosy, anthrax, trachoma, acute fever, scabies, epilepsy, but does not mention **plague**, which was a pandemic known as "**black death**"



History of medicine - highlights

Social medicine



- Plague pandemic started in 1332 in India, spread through China and Russia to Constantinople and Italy
- In the middle of 14th c.- whole Asia, Europe and north Africa
- ...wasteland, extinct cities, corps lying around, with no one to bury them



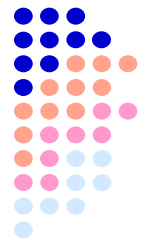


History of medicine - highlights

Social medicine

- “black death” most prominent in Dalmatia (Split, Zadar, Dubrovnik)
- In **Dubrovnik in 1377** – **first quarantine in the world** – 40 days of isolation and observation prior to unloading the cargo and people





History of medicine - highlights

Social medicine

- During 14th and 15th century – other epidemics: variola, dysentery, scurvy, leprosy...



History of medicine - highlights



Social medicine



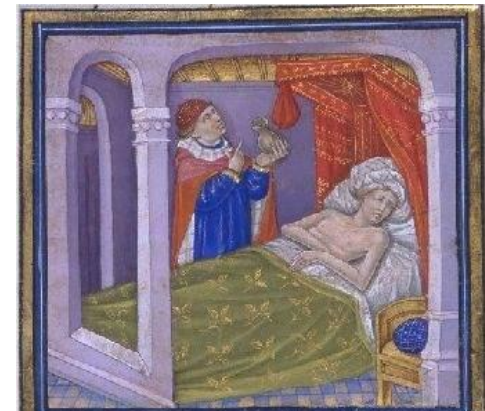
- **Girolamo Fracastoro** – theory about **invisible germs** that spread and cause diseases
- Through direct contact, via objects, ability to spread far from the source
- Refutes Galen's "miasm theory" (poisonous air and fumes)



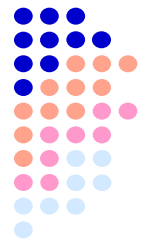
Girolamo Fracastoro

Social medicine

- "*De contagione et contagiosis morbis*" in **1543** – claims that germs multiply, are poisonous, could be destroyed by fire
- **Recommends regular body hygiene, clean environment, water and food sanitation, disinfection**

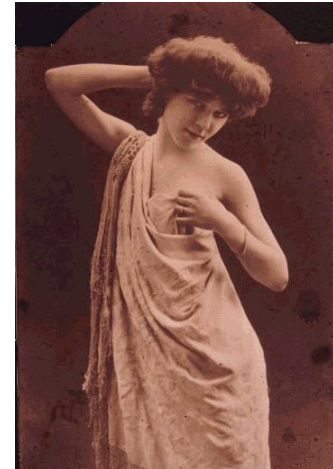


History of medicine - highlights



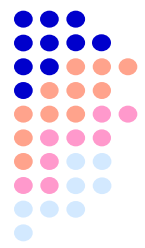
Social medicine

- at the end of 15th century and in 16th c. – new epidemic in Europe – syphi



- In Italy, Spain...

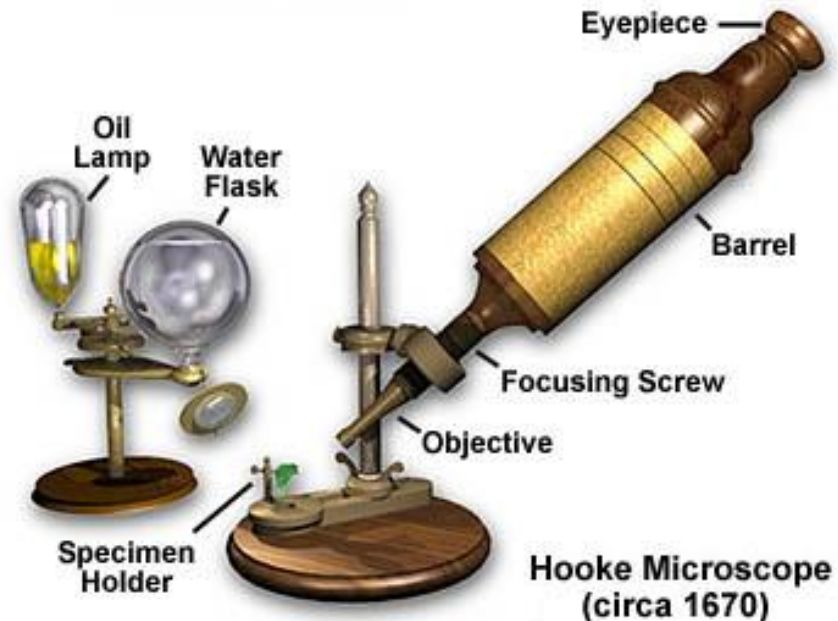


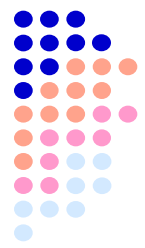


History of medicine - highlights

Social medicine

- Microscope discovery
- **Antony van Leeuwenhoek** in 1670

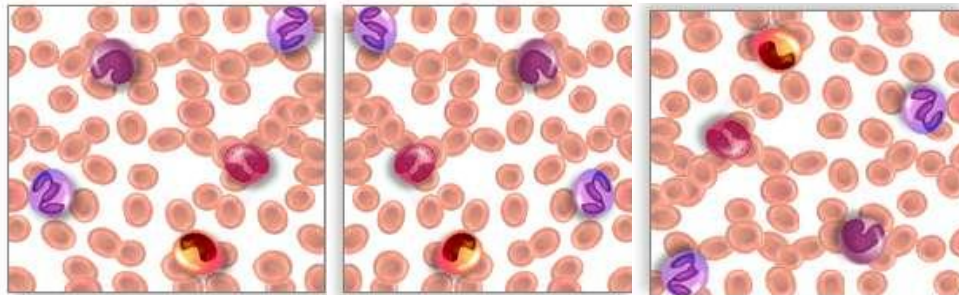


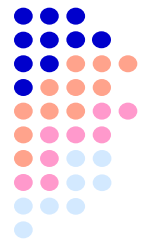


Antony van Leeuwenhoek

Social medicine

- Leeuwenhoek analyzed blood, saliva, bones, muscles, human eye lens, ect.
- Achieved magnification up to 40-160 times, later up to 270 times





History of medicine - highlights

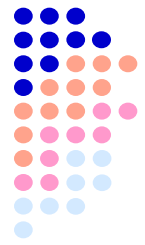
Social medicine

- In 18th c. doctor from Slovenia **Marko Anton Plenčič** supports the theory about **small living creatures** which cause communicable diseases
- He hypothesized that different creature causes different, specific disease
- **Described human immunity, susceptibility, incubation, disease carriers, some diseases (scarlet fever, variola)**



History of medicine - highlights

Social medicine



- At the end of 18th c. British doctor **Edward Jenner** noticed that women who milk cows often get cow pox (much more benign than smallpox) and never get smallpox, as a consequence



Edward Jenner



Social medicine

- After 20 years of observation – **experiment** on 8yrs old boy James Phipps
- Jenner took the pus from the hand of a women with cow pox and applied it to the boy – after 6 weeks the boy was exposed to smallpox – didn't get smallpox
- Published a book about **vaccination** in 1798 (vacca=cow)



History of medicine - highlights

Social medicine

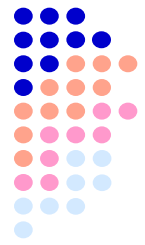


- Only in 19th century bacteria have been discovered
- **Pollender** discovered one of the largest bacteria - **anthrax** in the blood of dead animals

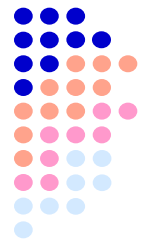


History of medicine - highlights

Social medicine



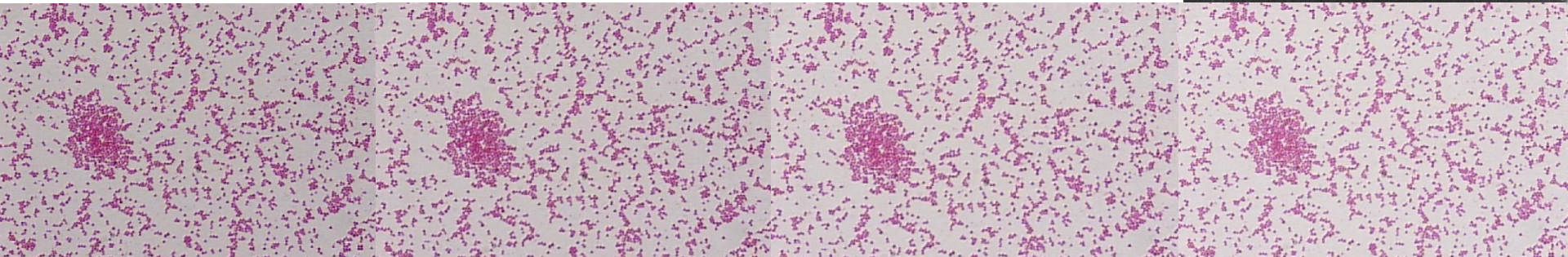
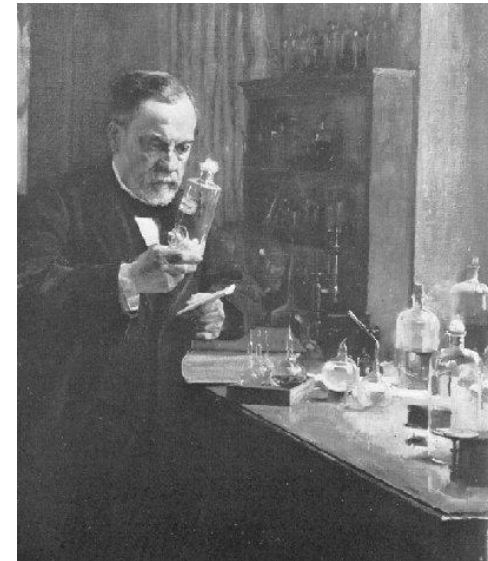
- **Louis Pasteur** – foundations for modern theory about causes of communicable diseases
 - discovered yeasts
 - introduced **pasteurization** for wine and milk

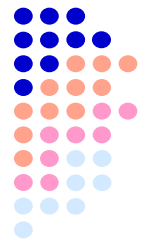


Louis Pasteur

Social medicine

- Investigated other pathogenic microorganisms
- Noticed how anthrax culture loses virulence – when applied to healthy animal it didn't cause the disease
- Created **vaccine** to immunize rams against **anthrax**
- In 1881. discovered **streptococcus and staphylococcus bacteria**



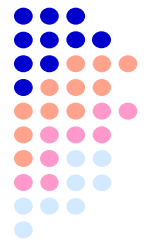


Louis Pasteur

Social medicine

- In 1885 **L. Pasteur** introduced **vaccination against rabies**
- Dried spinal cord from dogs died of rabies Pasteur applied for 9yrs old boy Joseph Meister, who was bitten by a rabid dog – the boy was saved
- Thanks to Pasteur, countless lives were saved all over the world





History of medicine - highlights

Social medicine

- During 19th c. in England – **great cholera epidemic**
- **John Snow** – a doctor particularly interested in this epidemics in 1854 creates hypothesis that cholera was transmitted via water



History of medicine - highlights



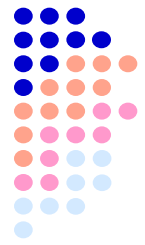
Social medicine



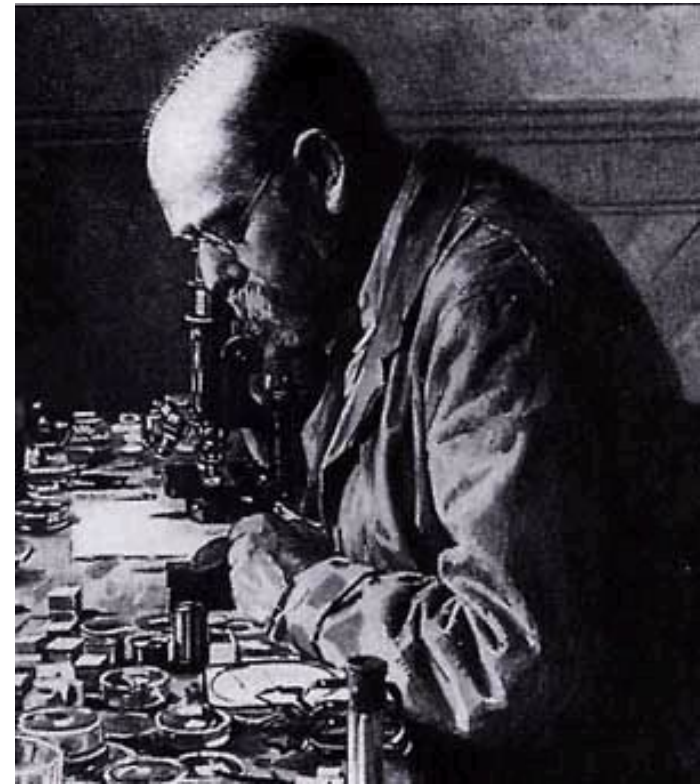
- 1882 **Robert Koch** discovered *M. tuberculosis*
 - 1890 discovered tuberculin, first considered cure, later became diagnostic tool
-
- tuberculosis was a pandemic at the end of 19th c. due to poor social and economic conditions

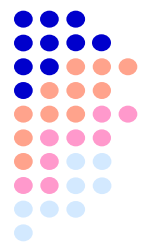
Robert Koch

Social medicine



- Koch also investigated other microorganisms: cholera, plague, malaria, typhus, amoebiasis





History of medicine - highlights

Social medicine

- At the end of 19th c. **Koch and Pasteur** formed new discipline -

microbiology

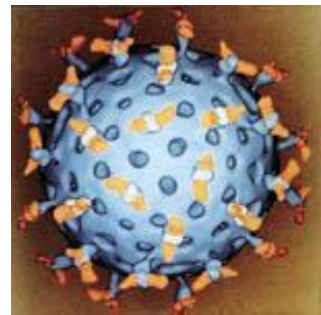
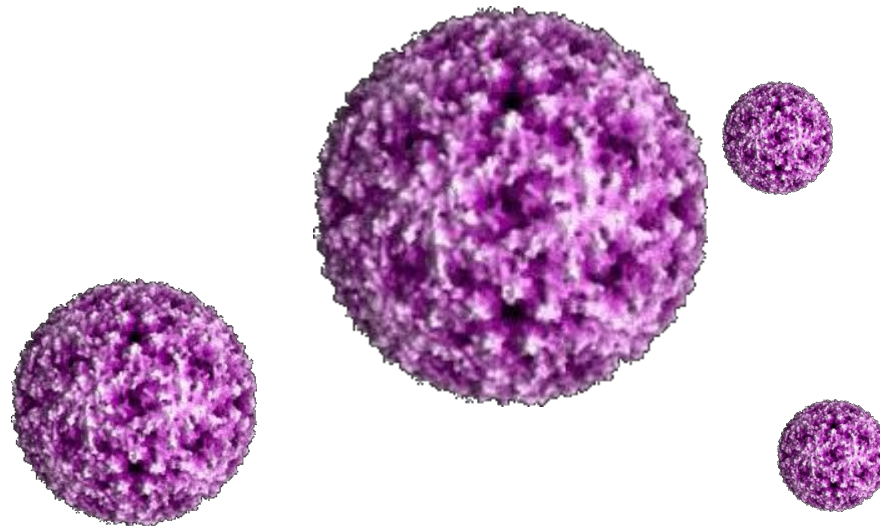
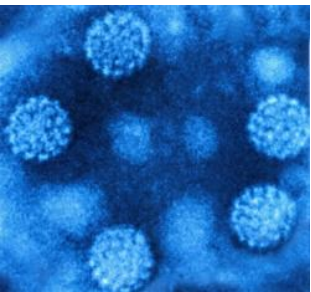
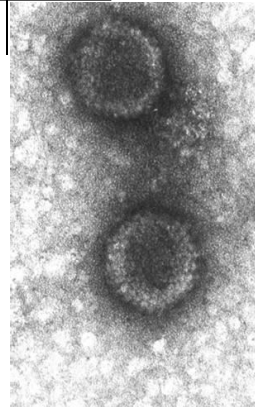




History of medicine - highlights

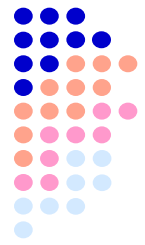
Social medicine

- Beginning of 20th c. – discovery of **viruses**
- 1908 - **Karl Landsteiner** - poliomyelitis virus
- 1912 - **Wilhelm Grueter** – herpes virus



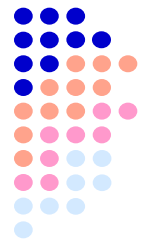
History of medicine - highlights

Social medicine



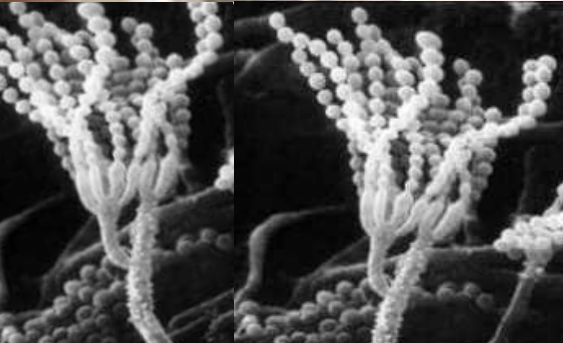
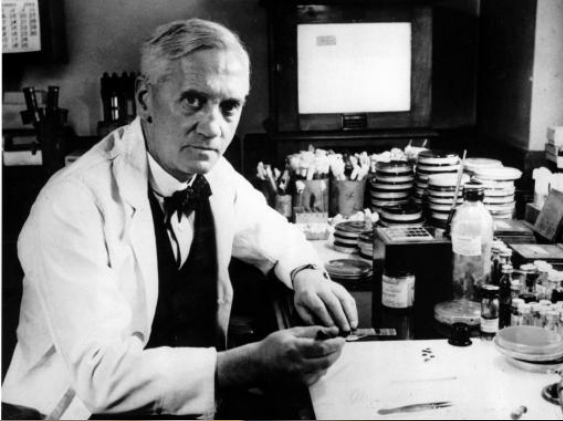
- In 1907 **Paul Erlich** introduced **chemotherapy** (chemicals that selectively destroy microorganisms, without causing damage to the host)
- 1923 – systematic prophylactic **BCG vaccine**



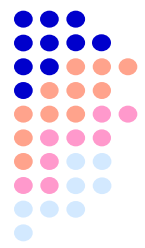


History of medicine - highlights

Social medicine



- 1928 **Alexander Fleming** accidental finding that the presence of molds blocked coccus culture growth
- *Penicillium notatum* - penicillin

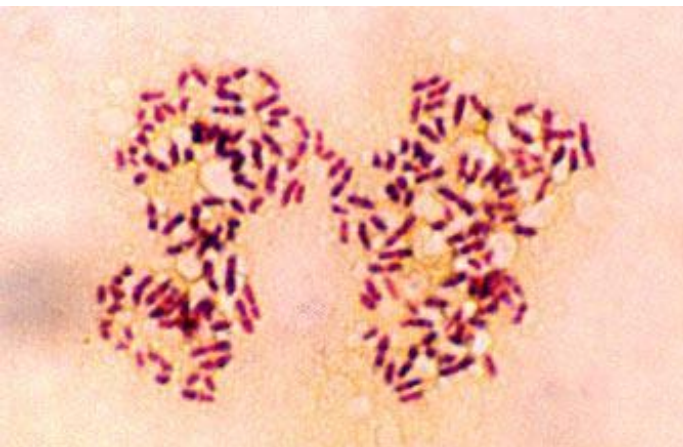


History of medicine - highlights

Social medicine



- Only from 1940s penicillin was applied during WWII against coccus bacteria, *C. diphtheriae*, anthrax, tetanus
- Over following years – discoveries of other antibiotics, most important was **streptomycin** (Selman A. Waksman – coined term antibiotic)

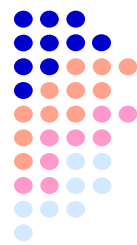


History of medicine - highlights

Social medicine



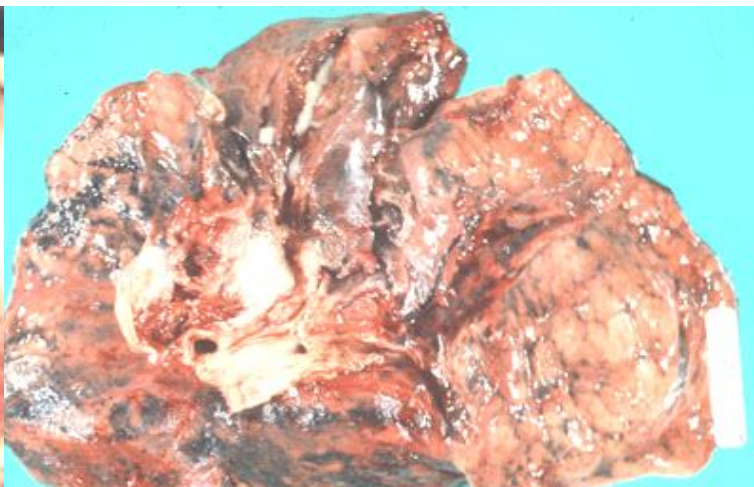
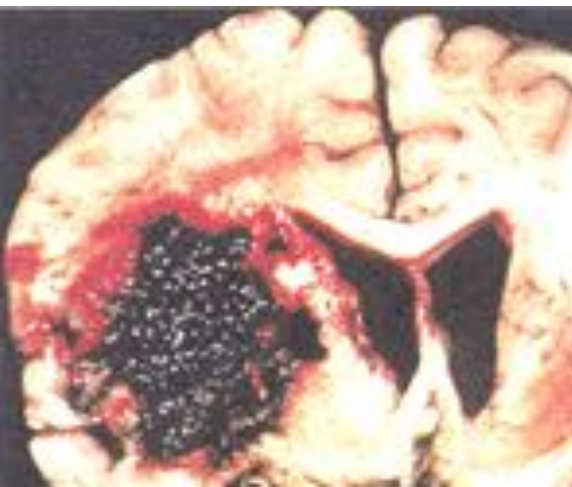
- Discovery of microorganisms, antibiotics and vaccines – led to disappearance of fatal epidemics of the past
- Further progress in medicine, social sciences, technology and economy - led to increased life expectancy in wealthy populations, and change in morbidity and mortality patterns



History of medicine - highlights

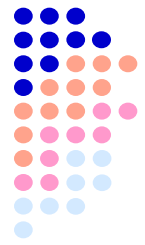
Social medicine

- During middle of 20th c. – increase in **cardiovascular diseases** morbidity and mortality in developed countries
- Leading causes of death, accompanied with cancers and accidents (traffic)



Framingham study

Social medicine



- started in 1948 in USA – most famous and longest cohort study of cardiovascular diseases risk factors

Smoking effects

Social medicine



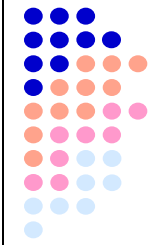
- Countless experiments and studies investigated smoking effects
- In 1951 famous study among British doctors began – smoking and lung cancer association?
(R Doll and AB Hill)



History of medicine - highlights

Social medicine

- Second half of 20th c. research topics:
 - Oral antidiabetic therapy
 - Ionizing radiation and leukaemia
 - Sacharin and bladder carcinoma
 - Thalidomide effects
 - Estrogen supplementation and endometrial cancer, and breast cancer
 - Passive smoking
 - HIV/AIDS
 - Risk factors for accidents
 -



Top achievements in medicine?

Social medicine



- <http://science.discovery.com/convergence/100discoveries/big100/medicine.html>
- <http://www.healthfiend.com/weeklytop/top-10-greatest-medical-discoveries-of-all-time/>

Jon Queijo: Breakthrough!: How the 10 Greatest Discoveries in Medicine Saved Millions and Changed Our View of the World



Social medicine

- Chapter 1. The World's First Physician: **Hippocrates** and the Discovery of Medicine
- Chapter 2. How **Cholera** Saved Civilization: The Discovery of Sanitation
- Chapter 3. Invisible Invaders: The Discovery of **Germs** and How They Cause Disease
- Chapter 4. For the Relief of Unbearable Pain: The Discovery of **Anesthesia**
- Chapter 5. I'm Looking Through You: The Discovery of **X-Rays**
- Chapter 6. The Scratch that Saved a Million Lives: The Discovery of **Vaccines**
- Chapter 7. From Ancient Molds to Modern Miracles: The Discovery of **Antibiotics**
- Chapter 8. Breaking God's Code: The Discovery of Heredity, Genetics, and **DNA**
- Chapter 9. Medicines for the Mind: The Discovery of **Drugs for Madness, Sadness, and Fear**
- Chapter 10. A Return to Tradition: The Rediscovery of *Alternative Medicine*