EPIDEMICS AND PANDEMICS IN THE 20TH AND 21ST CENTURY
How Nurses Responded to the Call to Duty

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Objectives

1. List the most significant epidemics/pandemics in the last century.

2. Discuss the tools used to fight these diseases and how/when/why they were developed.

3. Present Nursing and Public Health Nurse strategies used to contain epidemics/pandemics.

4. Describe the contributions of nurses and other healthcare professionals in the fight against the global pandemic.

5. Explore ways nurses prevent infectious diseases from spreading to broad populations in the US and the world.
1906 to 1907: “Typhoid Mary”

Mary Mallon, an asymptomatic carrier of typhoid, spread the disease to 122 New Yorkers during her time as a cook on an estate and in a hospital unit.

Typhoid bacteria (S. typhi) lives only in humans. It is spread by contaminated food and water.

CDC sites a total of 13,160 deaths in 1906 and 12,670 deaths in 1907. About 5 of the 122 persons contracting the disease from Mary Mallon died.

Mary Mallon was quarantined at least 2 times for her disease.

A vaccine was developed in 1911 and antibiotic treatment became available in 1948.

Typhoid fever is rare in developed countries.

Mary Mallon in Quarantine
A Listing of Epidemics and Pandemics

- **1918-H1N1 flu “Spanish Flu”**
  - Occurred during WWI, when the major countries at war did not acknowledge any information that might encourage the enemy. Only Spain, a neutral country, reported on the outbreak, thus the nickname the “Spanish flu.”
  - The flu quickly killed 25 million people worldwide in the first six months.
    - High death rate attributed to crowded military camps and urban areas, poor nutrition and sanitation.
    - Many deaths were due to bacterial pneumonia in lungs weakened by the influenza.
  - Three waves were documented:
    - The death rate in the first wave was relatively low in the first 6 months of 1918.
    - It rose in the second wave (October through December 1918) because mild cases stayed home, but sicker people were crowded together in hospitals and camps with greater transmission of severe disease.
    - The third wave in 1919 was less lethal than the second wave.

1918 Influenza Ward at Camp Funston, KS

Health Education in 1918

To Prevent Influenza!

Do not take anyone’s breath.
Keep the mouth and teeth clean.
Avoid those that cough and sneeze.
Don’t visit poorly ventilated places.
Keep warm, get fresh air and sunshine.
Don’t use common drinking cups, towels, etc.
Cover your mouth when you cough and sneeze.
Avoid Worry, Fear and Fatigue.
Stay at home if you have a cold.
Walk to your work or office.
In sick rooms wear a gauze mask like in illustration.
A Listing of Epidemics and Pandemics

- **Diphtheria Epidemic 1921 to 1925.**
  - The epidemic peaked in 1921 with 206,000 cases.
  - Effective vaccine developed and licensed in US in the mid 1920's.
  - Part of the DTaP vaccine series for children and DTaP booster for adults.
  - More than 80% of children vaccinated against diphtheria.
    - Only one case reported to CDC in 2018
  - The overall case-fatality rate for diphtheria is 5%–10%, with higher death rates (up to 20%) among persons younger than 5 and older than 40 years of age.

- [www.cdc.gov/nchs/fastats/immunize.htm](https://www.cdc.gov/nchs/fastats/immunize.htm)
- [www.cdc.gov/diphtheria/clinicians.html](https://www.cdc.gov/diphtheria/clinicians.html)
A Listing of Epidemics and Pandemics

- **Polio outbreaks in 1916 and 1952**
  - The 1916 outbreak was deadlier before the widespread use of iron lungs. Introduction of iron lungs to assist with breathing cut the death rate during the 1950’s outbreak.
  - 57,628 cases and 3,145 deaths in 1952.
  - Salk vaccine approved in 1955,
    - It was an injection that protected the Central Nervous System.
  - Sabin oral vaccine in 1962.
    - It was an oral vaccine that protected the CNS and the GI tract to prevent the spread of wild type polio.
    - No need for health workers to administer, so easier to use.
- US is polio free since 1979.
- Three other countries still working towards becoming polio free: Pakistan, Afghanistan and Nigeria.

- [https://ourworldindata.org/polio#all-charts-preview](https://ourworldindata.org/polio#all-charts-preview)
- [https://ourworldindata.org/polio#the-vaccine-against-polio](https://ourworldindata.org/polio#the-vaccine-against-polio)
Nurses Caring for Patients in Iron Lungs

https://ourworldindata.org/polio#historical-perspective
A Listing of Epidemics and Pandemics

- **1957-1958 Pandemic flu (H2N2)**
  - Also known as the Asian flu. First reported in Singapore in February 1957, Hong Kong in April 1957 and the coastal cities in the United States in the summer of 1957.
  - Was an avian (bird) and human crossover. Swine are the middle vector between birds and humans.
  - The virus seeded the population in the summer and when school started in the fall, it became epidemic in the US.

- **1968 Pandemic flu (H3N2)**
  - Also known as the Hong Kong flu.
  - The holiday break for schools was thought to have reduced the excess mortality, by reducing the spread of the disease.

- **2009 Pandemic flu (H1N1)**
  - Also known as the Swine Flu.
  - 60 million cases, 274,304 hospitalizations and 12,469 deaths in the US.
  - 80% of deaths worldwide were in persons younger than 65.
  - Vaccine available by December 2009, slowing virus activity.
Development of Swine Flu (H1N1)
A Listing of Epidemics and Pandemics

- **2020 – Present: COVID-19**
  - Appeared in China in late 2019 and spread across the world. First confirmed case in US was on January 21, 2020 in Washington state.
  - Declared a pandemic by the WHO on March 11, 2020.
  - US deaths from COVID-19 reach 100,000 on May 28, 2020.
  - Worldwide cases of COVID-19 reach 40 million with 1.1 million deaths, 220,000 of those in the US on October 19, 2020.
  - Currently in the United States there are 33.1 million cases of COVID-19 and 588,000 deaths reported.

Comparing the 1918 Pandemic to the 2019 COVID Pandemic

- **Spanish Flu**
  - Mortality rate estimated at 1%.
  - Masks and quarantine.
  - Traditional print media coverage.
  - Sense of duty to cooperate with public health measures.
  - School and business closures to prevent spread of virus.

- **COVID-19**
  - Mortality rate estimated at 0.5 to 1%.
  - Masks and social distancing.
  - Social media coverage/Disinformation spread.
  - Vaccine development/Resistance to vaccination and public health measures.
  - School and business closures to prevent spread of virus.
The more things change, the more they stay the same...

- Like on every other matter, reporting on the Spanish flu in late 1918 was dictated by President Woodrow Wilson.
  - The public were to be served good, righteous and morale-boosting information, but not the truthful one. Newspaper reports on the flu were dominated by half-truths, lies and distortions. Public health officials also lied about the influenza, never acknowledging its danger.

- "The original idea was that Facebook was a public square where you can come in and say anything you want," says Bhaskar Chakravorti, an economist who studies digital technology use and dean of global business at the Fletcher School at Tufts University. "Now they’re realizing if they’re creating a health hazard, they need to put on some constraints."
  - Falsehoods spread significantly faster than the truth on social media, and those age 65 and older are particularly vulnerable to misinformation.
  - A 2019 study found that found older adults are seven times as likely as younger people to share fake or misleading content on Facebook. The researchers hypothesized that some older adults may not have the digital media literacy and experience to recognize untruths.

- [https://advances.sciencemag.org/content/5/1/eaau4586](https://advances.sciencemag.org/content/5/1/eaau4586)
- [https://science.sciencemag.org/content/359/6380/1146](https://science.sciencemag.org/content/359/6380/1146)
Public Health Tools to Combat Pandemics

△ The two principal strategies for containing serious human outbreaks of influenza are:
   ▷ Therapeutic countermeasures (i.e., vaccines and antiviral medications).
   ▷ Public health interventions (i.e., infection control, social separation, and quarantine).

△ Similarities in the public health aspects between the 1918 flu and the COVID-19 virus pandemics include:
   ▷ Rapid spread and accelerated death tolls
   ▷ Lack of testing and vaccines
   ▷ Reliance on isolation, hygiene and disinfectants
   ▷ Overburden on the healthcare system
QUARANTINE
- healthy person
- exposed
- staying at home + away from others

VERSUS

ISOLATION
- known case
- sick (even mild symptoms)
- staying at home + away from others
Nurses Roles During Pandemics

Nurses hold a vital function, as one of the most distinguished health service teams and are charged with:

- Delivering public awareness regarding disease prevention
- Decreasing the dissemination of myths regarding the epidemic
- Countering myths/disinformation
- Guiding people to available health services
- Supporting evidence-based patient management
- Infection reduction initiatives
- Occupational safety
  - PPE: masks, gloves, gowns, goggles, hand antiseptics, soap and water, cleaning materials
    - Proper donning and doffing of PPE
  - Self-Assessment of symptoms
  - Isolation and quarantine
  - Supportive Nursing Management
  - Self care and Stress reduction

[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7543802/]
Pandemic Nursing-Then and Now
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