The spread of a new virus has caused a worldwide effort to combat the COVID-19 pandemic. Humans, however, have experienced many viral outbreaks in the past. Historical data can help inform current analyses and decisions. Thus, this infographic compares COVID-19 with past pandemics and outbreaks to showcase similarities and differences. This can allow for a better understanding of COVID-19 in the context of past events and the changing perspectives over the past century.

**TOTAL DEATHS COMPARED**

<table>
<thead>
<tr>
<th>Year</th>
<th>Outbreak</th>
<th>Deaths (# of people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1918</td>
<td>H1N1 “SPANISH FLU”</td>
<td>50,000,000+</td>
</tr>
<tr>
<td>1957</td>
<td>H2N2 “ASIAN FLU”</td>
<td>1,100,000</td>
</tr>
<tr>
<td>1958</td>
<td>H3N2 “HONG KONG FLU”</td>
<td>1,000,000</td>
</tr>
<tr>
<td>1981</td>
<td>HIV/AIDS</td>
<td>32,700,000</td>
</tr>
<tr>
<td>2003</td>
<td>SARS-CoV “SARS”</td>
<td>774</td>
</tr>
<tr>
<td>2009</td>
<td>H1N1 “SWINE FLU”</td>
<td>284,500 <em>first 12 months</em></td>
</tr>
<tr>
<td>2012</td>
<td>MERS-CoV “MERS”</td>
<td>858</td>
</tr>
<tr>
<td>2014</td>
<td>EBOLA VIRUS</td>
<td>11,325</td>
</tr>
<tr>
<td>2015</td>
<td>ZIKA VIRUS</td>
<td>29</td>
</tr>
<tr>
<td>2019</td>
<td>SARS-CoV-2 “COVID-19”</td>
<td>1,071,000+</td>
</tr>
</tbody>
</table>

**ESTIMATION OF CONTAGIOUSNESS**

The Basic Reproductive Ratio (R₀) is a value used to represent the number of secondary cases that would be caused by one infected person in a susceptible population. R₀ can vary and depends on many variables such as human activity, seasonal factors, the pathogen, and modeling assumptions. When used correctly, it is a crucial epidemiological estimation of the contagiousness of a disease.15

**Figure 1:** Comparison of death totals to date of selected past viral pandemics and outbreaks since 1900. A break in the graph is used to represent the death totals of H1N1 “Spanish Flu” and HIV/AIDS due to deaths being approx. more than 30x higher. Viral influenza pandemics were included, and additional outbreaks of the 21st century were included for comparison and recency.13,14

**Figure 2:** The Basic Reproductive Ratio (R₀) of viral outbreaks were represented using circle sizes proportional to their values. Values were pulled from literature and rounded, but may vary by study.

R₀

- 1.5-2.5 COVID-19 (SARS-CoV-2)12,20
- 2.5 SARS-CoV12,20
- 3 H1N1 191812,17
- 1.1-2.1 H3N2 *1st wave*19
- 1.2-1.6 H1N1 200921
- 1.5-1.8 H2N219
- 0.9-2.1 SEASONAL FLU14
- 2 H1N1 191812,17
- 3.8 ZIKA24
- 1 MERS-CoV13,23
RESPONSES & PERCEPTIONS

Advancements in technology, globalization, and changing news perceptions have influenced pandemic management over the years.\(^{26}\) Since 1918, these changing factors have shifted the way outbreaks are responded to and perceived.

**H1N1 “SPANISH FLU”**

The Spanish Flu infected one-third of the world’s population, with its spread heightened by the war.\(^{1,26}\) Despite the isolation and hygiene measures that were put in place, the lack of vaccines and antibiotics led to an inevitably disastrous outcome.\(^{1}\) Nonetheless, it sparked increasing research on influenza.\(^{26}\)

**THE MID-1900s AND ADVANCEMENTS**

Viruses were discovered and isolated from people in the 1930s.\(^{27}\) By the second half of the 20th century, the World Health Organization played a major role in the surveillance of disease, presenting itself as a reliable source of pandemic information.\(^{26}\) By this time, vaccinations for influenza were widely accepted.\(^{26}\)

**21ST CENTURY OUTBREAKS AND CONSIDERATIONS**

By the 21st century, politics became heavily involved in preparedness as pandemics were sometimes treated as a “security threat.”\(^{26,29,30}\) Additionally, SARS, H1N1, Ebola, and Zika brought a focus on mental health, balancing preparedness and panic, quickly containing outbreaks, and critically evaluating information on social media.\(^{1,28}\)

REFERENCES


ARTICLE INFORMATION

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1918 TO 2019

**SIMILARITIES:**

- Use of masks:
- Importance of quick response and containment
- Isolation methods to try and lessen spread

**DIFFERENCES:**

- Social distancing seems to be more effective in 2019 than in 1918
- Quick identification of SARS-CoV-2 compared to confusion in identifying H1N1

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DIAGRAMS

1. Diagram illustrating the timeline of pandemic flu outbreaks.
2. Diagram comparing the 1918 and 2019 flu pandemics.
3. Diagram showing the impact of social media on pandemic information.

IMAGES

- Image of a vaccine vial, symbolizing the role of vaccines in pandemic management.
- Image of a World Health Organization logo, representing global health governance.
- Image of a mask, emphasizing the importance of personal protective measures.

SOCIAL MEDIA ICONS

- Facebook icon, representing the role of social media in pandemic information dissemination.
- Twitter icon, symbolizing the role of social media in real-time news updates.
- LinkedIn icon, indicating professional networking in the field of public health.

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