

P4447

The impact of COVID-19 non-pharmaceutical interventions on notifiable infectious diseases in Poland: a comprehensive analysis from 2014-2022

11. Public health & vaccines

11g. Global health & health security (incl policy-making, climate change, biosafety/biosecurity)

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Background

The COVID-19 pandemic prompted widespread non-pharmaceutical interventions (NPIs) like lockdowns and masking in Poland (2020-2022), significantly altering pathogen circulation. This created a unique opportunity to study the extended effects of these measures on other communicable diseases, moving beyond short-term observations. This study aimed to assess how the pandemic and associated NPIs affected the incidence of 17 notifiable infectious diseases in Poland over an extended period, from January 2014 to December 2022.

Methods

Using national surveillance data aggregated monthly, we compared incidence during pandemic years (2020-2022) against pre-pandemic (2014-2018) and baseline (2019) periods. Data were deseasonalized. A negative binomial generalized linear model calculated incidence rate ratios (IRRs) relative to 2019, controlling for confounders. Spearman correlation measured associations between disease incidence, COVID-19 cases, and nine NPIs.

Results

From 2020-2022, 13 of 17 diseases showed cumulative declines compared to 2014-2019, including whooping cough (peak reduction IRR 0.11 in 2021 vs. 2019), scarlet fever, chickenpox, and mumps. Invasive *Streptococcus pneumoniae* decreased initially but rebounded in 2022. Conversely, *Clostridioides difficile* incidence increased significantly (2021 IRR 1.84 vs. 2019). Norovirus, HIV, and syphilis surged later, coinciding with NPI relaxation. Higher NPI stringency generally correlated negatively with respiratory pathogens.

Conclusions

Long-term observation confirmed that widespread NPIs suppressed many communicable diseases, particularly respiratory infections, beyond SARS-CoV-2. The rebound of several infections upon NPI relaxation suggests potential shifts in population susceptibility. These findings can inform future public health strategies balancing disease control and societal needs, though further research on long-term dynamics is warranted.

Figure 1. Biweekly pandemic policy timeline and stringency in Poland (2019-2022). Heatmap shows ordinal intensity (0-4) for nine OxCGRT NPIs; the line indicates the Stringency Index (0-100). Shaded bands mark study phases IIV.

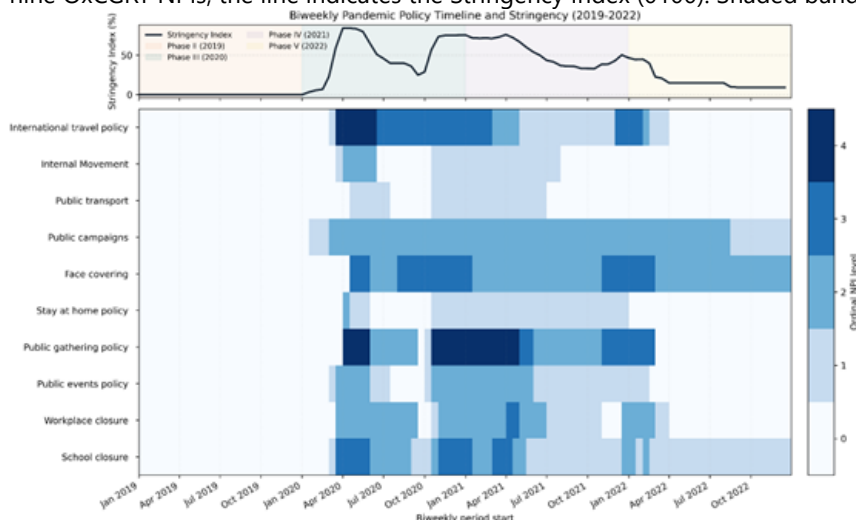


Figure 2. Average OxCGRT NPI intensity by pandemic phase. Mean ordinal levels (0=no measures) for nine NPIs across Phase III (2020), Phase IV (2021), and Phase V (2022).

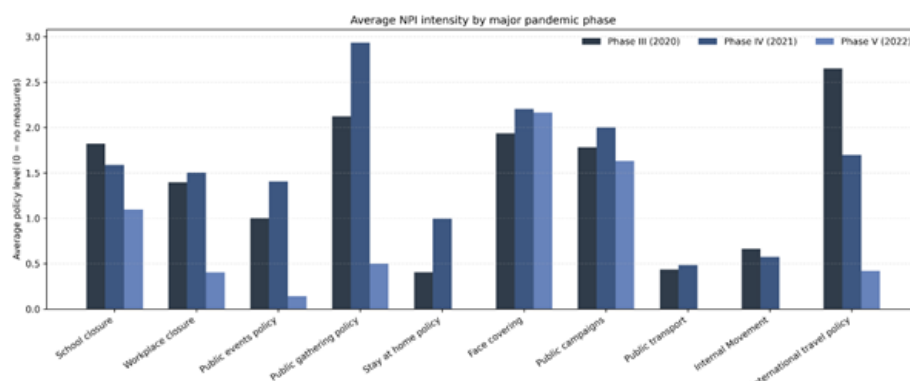
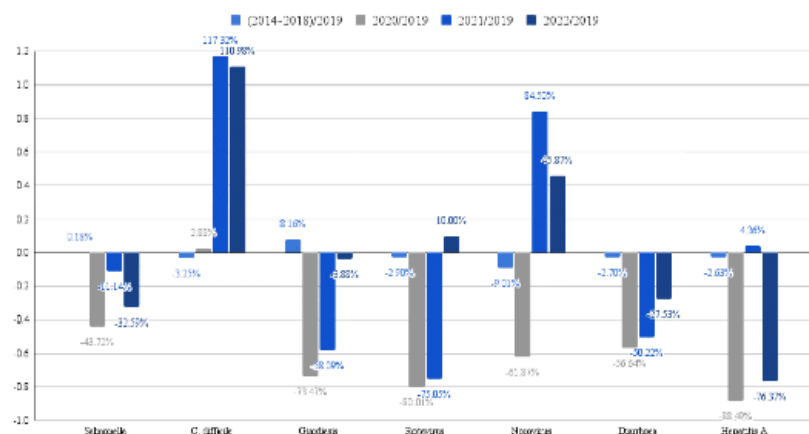
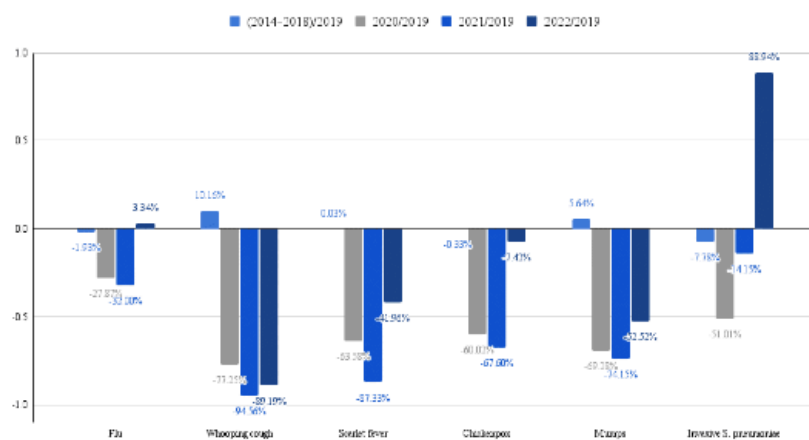


Figure 3. Percentage change of the crude annual incidence of 17 selected notifiable diseases in Poland, before and after the pandemic. (a) Respiratory and air-droplet transmitted diseases, (b) gastrointestinal diseases, (c) Sexually transmitted, vector- and wound-borne diseases.

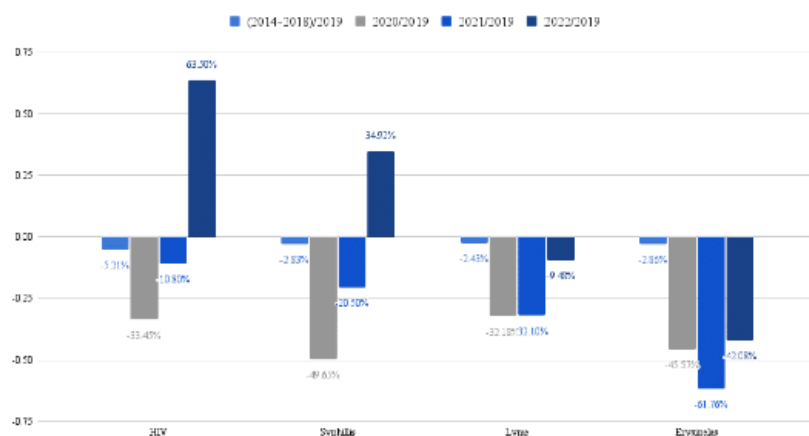
Gastrointestinal Disease



Respiratory Disease



Sexually transmitted, Vector- & Wound-borne Disease



References, 300 characters, including spaces (if exceeding 300 characters please provide DOI number only) :

1. COVID- Coronavirus Statistics - Worldometer [Internet]. [cited 2024 Oct 29]. Available from: <https://www.worldometers.info/coronavirus/> 2. COVID-19 cases | WHO COVID-19 dashboard [Internet]. World Health Organization Data. [cited 2024 Oct 29]. Available from: <https://data.who.int/dashboards/covid>

Conflicts of interest

Do any of the authors have conflicts of interest related to the studies presented in this abstract?

No