Efficacy of Nonpharmacologic Interventions Aimed at SARS-CoV-2 in Decreasing Influenza Activity in Michigan

David Lawlor MS3, Eric Lind MS3, Christian Vazquez MS3
Andrew Jameson MD FACP AAHIVS

Michigan State University College of Human Medicine
Mercy Health – Grand Rapids

Objective

Determine whether widespread implementation of COVID-19 NPIs has reduced the incidence and burden of influenza in the 2020-21 season to guide post-pandemic public health measures for future influenza seasons.

Introduction

- Millions of encounters for influenza-like illness (ILI) burden the healthcare system every year.
- Nonpharmacologic interventions (NPIs):
  - Closure of public spaces, bans on mass gatherings, stay-at-home orders, isolation of the sick and close contacts, social distancing, hand hygiene, and use of personal protective equipment (PPE) including mandatory mask wearing
  - Mitigate transmission via fomites, large droplets, and aerosol
  - Seem to reduce healthcare visits and poor outcomes e.g. the 1918 and 2019 influenza epidemics
  - Have not seen such widespread adoption until the COVID-19 epidemic

Methodology

- A retrospective cohort study reviewing positive cases of influenza in the state of Michigan using publicly available data from Michigan Department of Health and Human Services (MDHHS) and ILINet (CDC, state and local health departments)
  - Include mandatory reporting, facility outbreaks, and volunteer sentinel clinicians, hospitals, labs and syndromic surveillance
- Primary variable: Positive influenza tests during the 2020-2021 season (10/30/2020 - 04/30/2021) compared to the three previous flu seasons
- Secondary variables: Mortality and hospitalizations between the current flu season and the previous three flu seasons
- ILI defined as fever >100ºF and a cough and/or sore throat without a known cause other than influenza

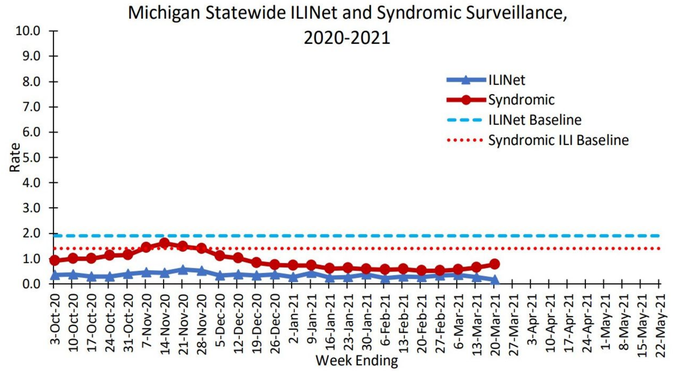
Results

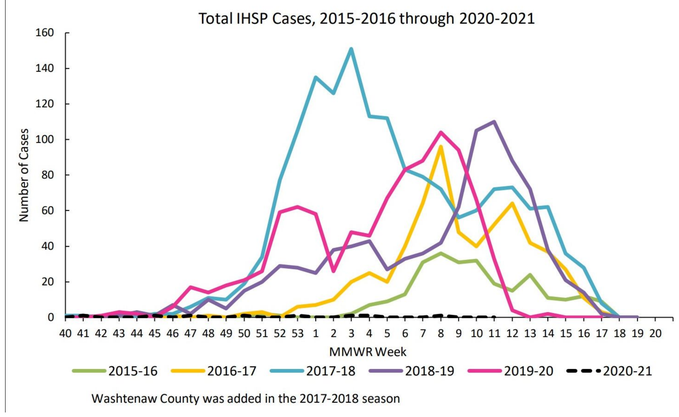
- MI baseline ILI: 1.9% (calculated over the previous 3 years)
- MI peak ILI activity this season: 0.7%
- Influenza-attributable deaths in Michigan (previous 3 seasons):
  - Total: 267 deaths/year average
  - Pediatric: 4 deaths/year average
- Influenza-attributable deaths this season, as of 03/20/2021:
  - Total: 1 death
  - Pediatric: 0 deaths

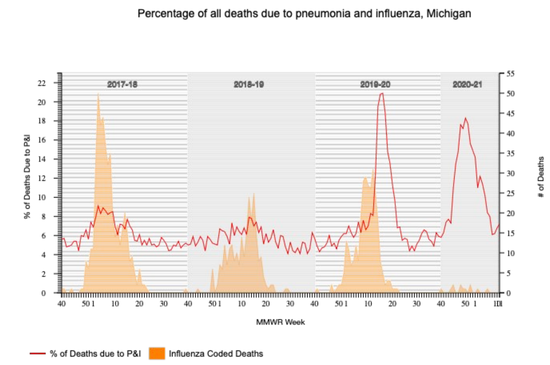
Figures

Number of Reports and ILI % by Region during this time period:

Region	C	N	SE	SW
No. of Reporters **(17)**	8	2	6	1
ILI %	0.1	0.2	0.3	0.0







Discussion

- Influenza cases were drastically reduced in the 2020-21 season compared to the previous 3 seasons
  - Which NPIs were most responsible?
  - What were the compliance rates for these NPIs?
  - What was the influenza vaccination rate this year?
- Important to find balance between greatest effect and lowest impact on daily life

Conclusions and Future Work

- Influenza cases are reduced with NPIs implemented at a population-wide level
- Significant reduction in influenza-coded deaths
  - However, excess mortality rates increased
  - Current COVID-19 death rates do not entirely account for this increase in excess mortality rates
- Continue NPIs during subsequent flu seasons
- Physical distancing
- Mask wearing during flu season
  - Low cost, large personal and systemic/public health benefit
- Large randomized trial stratified by risk

References

https://www.michigan.gov/documents/mdch/Influenza_Guidance_for_Healthcare_Providers_2015-2016_503396_7.pdf
https://www.mdch.state.mi.us/pha/osr/Provisional/CvdTable1.asp
https://www.michigan.gov/documents/MIFluFocus_1_5_06_146893_7.pdf
https://www.michigan.gov/documents/MIFluFocus_1_5_06_146893_7.pdf
https://www.michigan.gov/documents/MIFluFocus_1_5_06_146893_7.pdf
https://www.michigan.gov/documents/MIFluFocus_1_5_06_146893_7.pdf