Conference for Food Protection Executive Board Meeting Spring 2022

Agenda Item 4.5.3

Adam Kramer, ScD, MPH, RS

Water, Food, and Environmental Health Services Branch

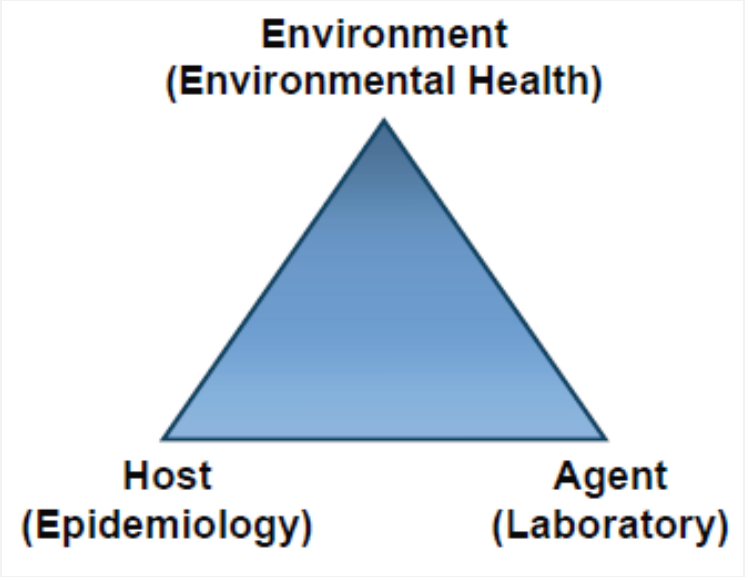
Division of Environmental Health Science and Practice

Centers providing updates

- National Center for Environmental Health (NCEH)
- National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)
- National Center for Immunization and Respiratory Diseases (NCIRD)

U.S. Foodborne Outbreak Surveillance

NEARS
National Environmental Assessment Reporting System



NORS
National Outbreak Reporting System

CaliciNet
National Norovirus Outbreak Network

PulseNet USA

NATIONAL CENTER FOR ENVIRONMENTAL HEALTH

New Publications

Tools and Techniques to Promote Proper Food Cooling in Restaurants

- https://www.neha.org/node/62441
- Found cooling most successful when depth <3” and uncovered
- Highlighted cooling formula for quickly assessing cooling

Operational Antecedents Associated with *Clostridium pefringens* Outbreaks in Retail Food Establishments, United States, 2015-2018

- https://www.liebertpub.com/doi/full/10.1089/fpd.2021.0068
- Identified three categories of antecedents (People, Process, Equipment)

EH Capacity Cooperative Agreement uses 3 strategies to build EH program capacity

EH Data

All EHC recipients have projects on using EH data.

EH Programs & Services

Optional recipient projects to strengthen capacity in EH program and service areas.

EH Hazards & Issues

Optional recipient projects to enhance capacity to address emerging or priority EH hazards and issues.

Strategy 1: Strengthen EH data use and informatics capacity

Strategy 2: Identify, prevent, and control EH hazards

Strategy 3: Assess EH intervention effectiveness and impact

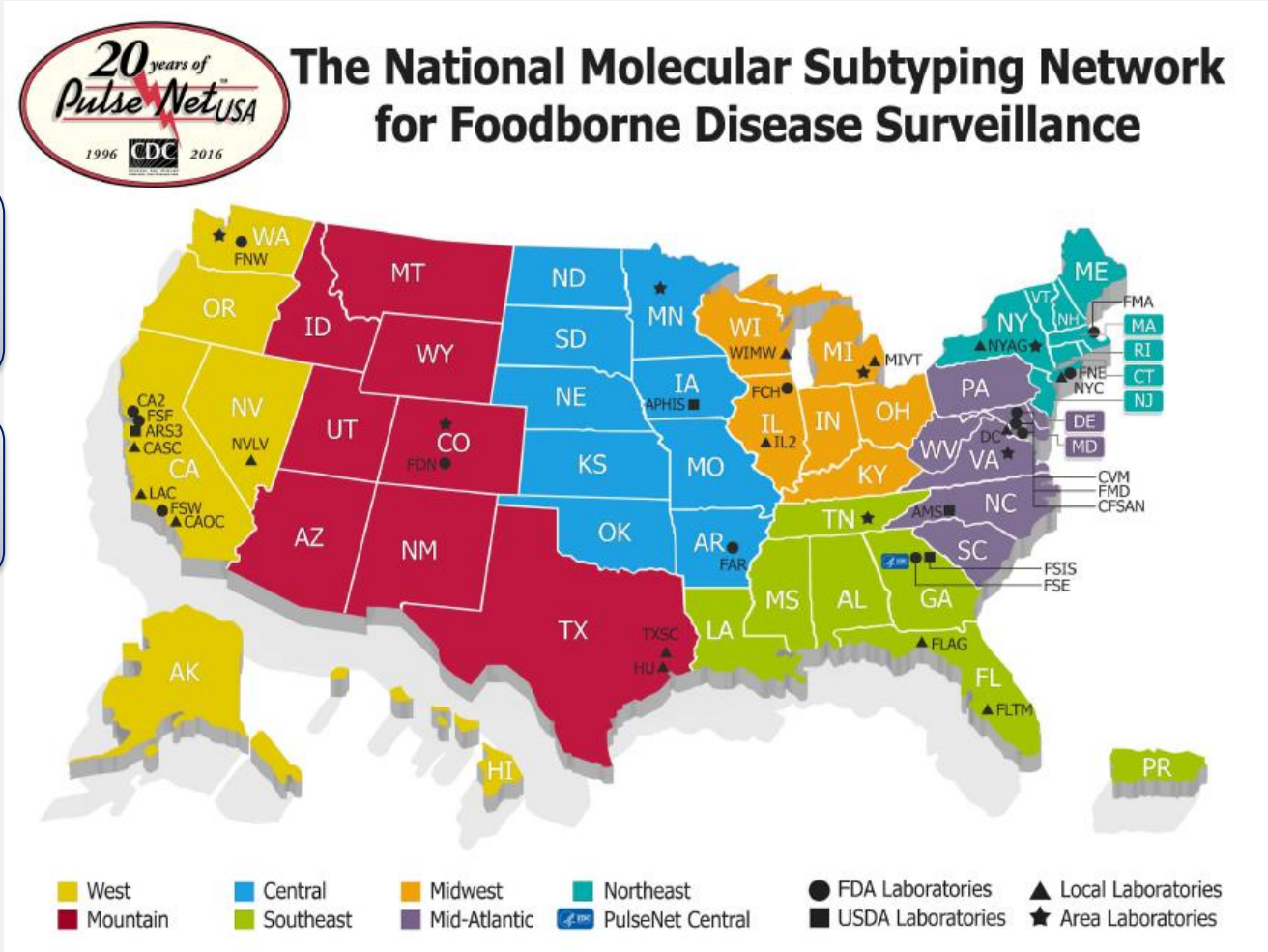
NATIONAL CENTER FOR EMERGING AND ZOONOTIC INFECTIOUS DISEASES

DFWED Prevention Priorities

- DFWED's Prevention Office focuses on translating epidemiological and laboratory findings into public health interventions
- Working with internal and external partners, the Prevention Office identified four foodborne disease prevention priorities:
  - **Beef and *Salmonella***
  - **Chicken and *Salmonella***
  - **Leafy greens and STEC**
  - **Shellfish and *Vibrio***
- DFWED also has Prevention Priorities to address waterborne diseases and fungal infections
- For more information, please contact Sarah Wiley at sed5@cdc.gov or see www.cdc.gov/ncezid/dfwed/prevention-priorities/index.html

82 state and local public health and food regulatory agency (FDA/USDA) labs participate in PulseNet

PulseNet Transitioned its Primary Subtyping method to WGS **July 15, 2019**



The Evolution of Foodborne Laboratory Surveillance: Implementing Next Generation Molecular Surveillance Methods

Yesterday

PFGE

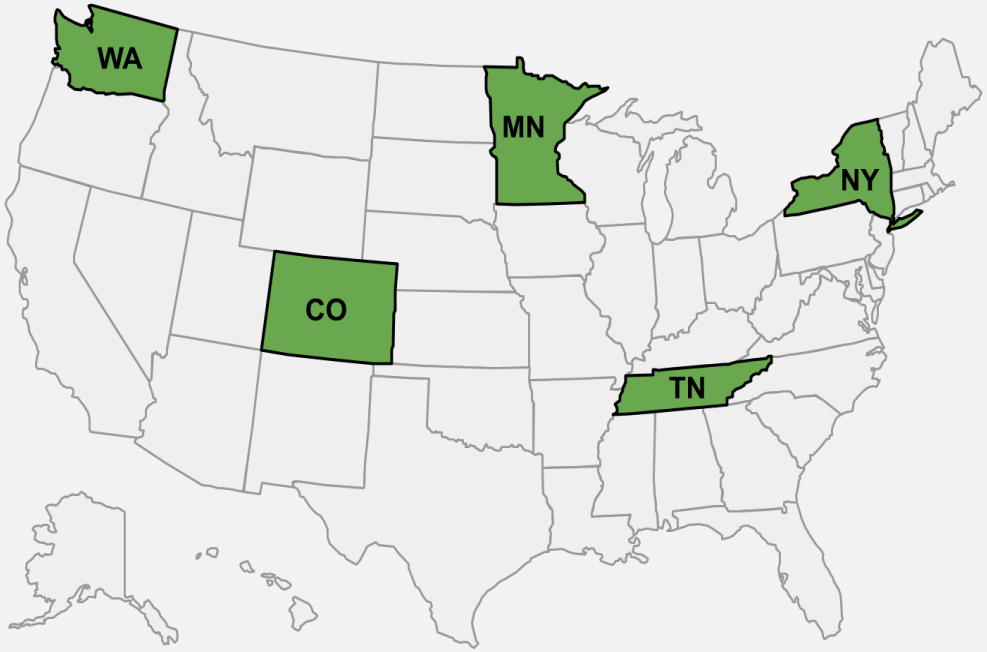
Today

WGS

Tomorrow

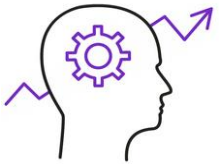
Metagenomics

Integrated Food Safety Centers of Excellence (CoEs)



Strengthen & Improve surveillance and outbreak investigations

Train & Educate students and public health personnel



Evaluate & Analyze the timeliness and effectiveness of surveillance and outbreak response

Disseminate & Communicate tools and resources

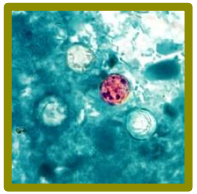
CoE Products

- **A variety of tools and resources have been developed and are available online**
  - https://foodsafetycoe.org/ (**NEW!**)
  - Resources (including quick train videos, webinars, and guidance documents) all still available on Centers' websites

    http://www.ucdenver.edu/academics/colleges/PublicHealth/research/centers/foodsafety/Pages/default.aspx
    http://mnfoodsafetycoe.umn.edu/
    https://nyfoodsafety.cals.cornell.edu/
    http://foodsafety.utk.edu/
    http://foodsafety.uw.edu/
- **In addition to numerous online products, the CoEs receive funding to assist state and local health departments on a one-on-one basis**

FoodNet

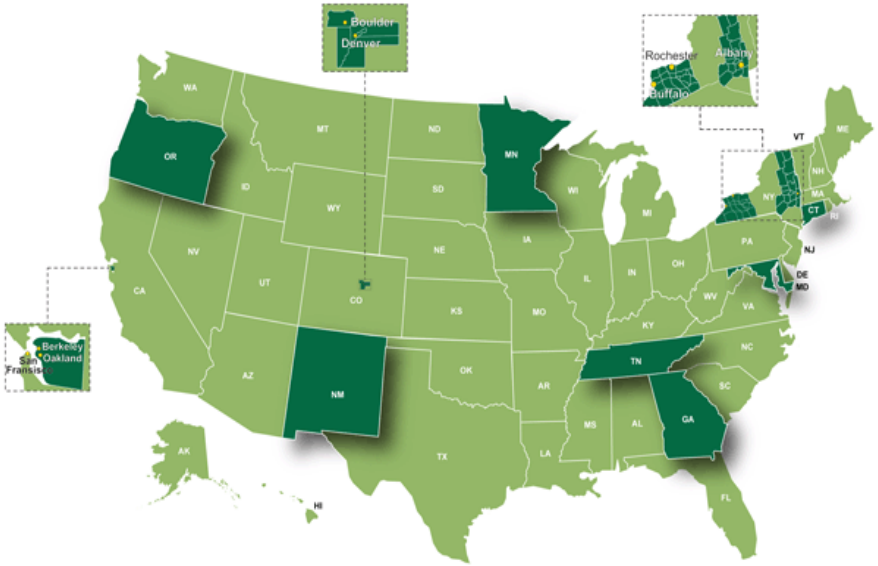
Campylobacter



Cyclospora

Listeria

Salmonella



FDA CDC USDA

CENTERS FOR DISEASE CONTROL AND PREVENTION

Shigella

STEC & pediatric HUS*

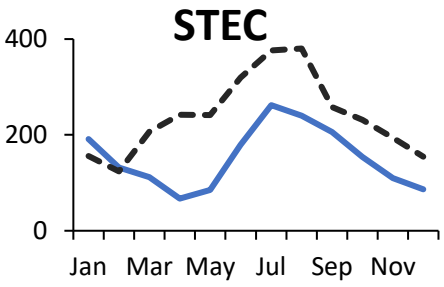
Vibrio

Yersinia

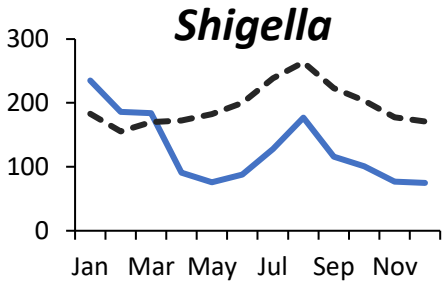
*hemolytic uremic syndrome

Decreased number of infections reported for each pathogen, 2020

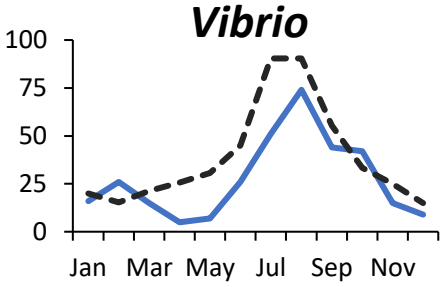
compared with previous 3 years



- 37%



- 34%



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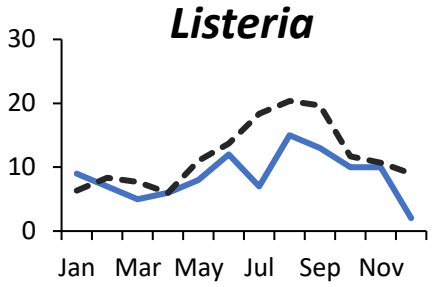

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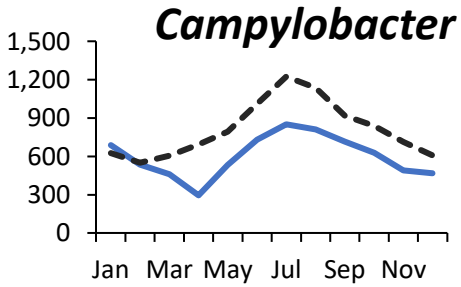

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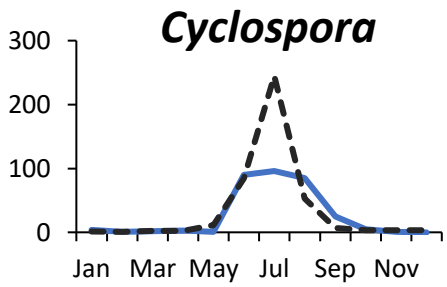
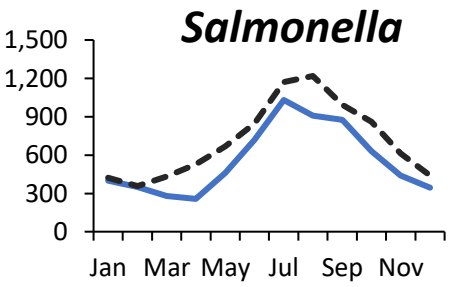
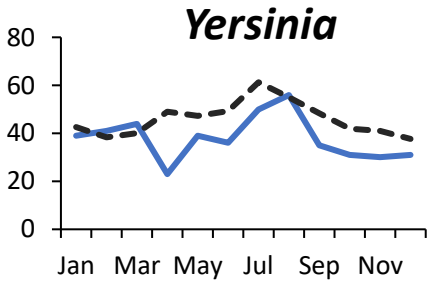


- 25%

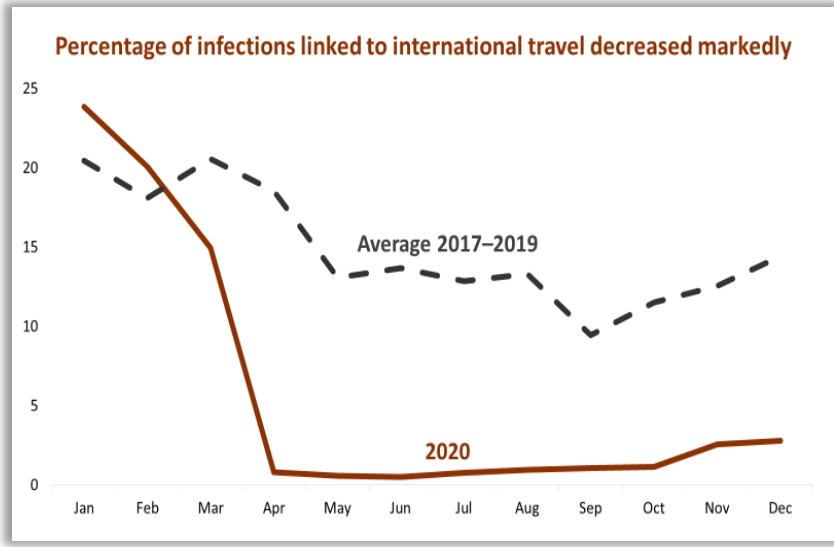


- 22%



- 18%

Much of the decreased incidence in 2020 was real



Evidence compared with previous 3 years:

- Some of the decrease was definitely real
  - 73% fewer infections associated with international travel
- While many decreased, incidence of some infections actually increased with new niches
  - *Salmonella* Hadar (exposure to backyard flocks)
- Observed decreases not due to lab or surveillance artifacts
  - Similar % of infections detected by CIDT ⇨ suggests labs able to test specimens
  - FoodNet declines mirrored PulseNet declines
  - No increase in % deaths, tiny increase in % hospitalized ⇨ suggests severe cases continued to seek care, although healthcare changes of outpatient visits via telemedicine could affect less-severe case data

A major change in exposures could account for the decreased incidence:

- Fewer meals were made outside the home (2/3 less spending on food made away from home)
- Daycares, schools, and many offices closed, changing behaviors and exposures

FoodNet

Summary of Recent FoodNet Work

Annual FoodNet MMWR (published Sept ’21) described incidence of enteric infections in 2020 and trends during the first year of the pandemic
(next report covering 2021 data is currently under analysis for publication late summer)

Completed **manuscript describing laboratory practices** in FoodNet states during 2012-2019, when use of CIDTs was increasing and reflex cultures decreasing (submitted to journal and expect publication in 2022)

Began developing methods and obtained resources to allow FoodNet to conduct **surveillance for reoccurring, emerging, and persistent (REP) strains**

The **2018-19 FoodNet Population Survey** is complete, is being used in multiple analyses and studies, and is currently available online at:
https://wwwn.cdc.gov/foodnetfast

Most *Salmonella* infections are acquired domestically from food. Some are acquired during international travel and some from other domestic sources.

Estimates from structured expert judgment

~59% acquired domestically from food

~11% acquired during international travel

~30% acquired domestically from animals, water, other people, or the environment

Chicken can be a source of *Salmonella* acquired in ways other than eating chicken

- Raw poultry can contaminate foods in refrigerator and on cutting boards
- Feces of chickens can contaminate water used to irrigate vegetables
- A food handler infected with *Salmonella* from chicken can transmit it when his feces contaminates food

FoodNet data for travel %; Beshearse, EID 2021 for other %.'s

Source Attribution Estimates

During 1998–2008,
19%
of domestically acquired salmonellosis
from poultry

During 2019,
23%
of domestically acquired foodborne salmonellosis
from poultry

17% from chicken

6% from turkey

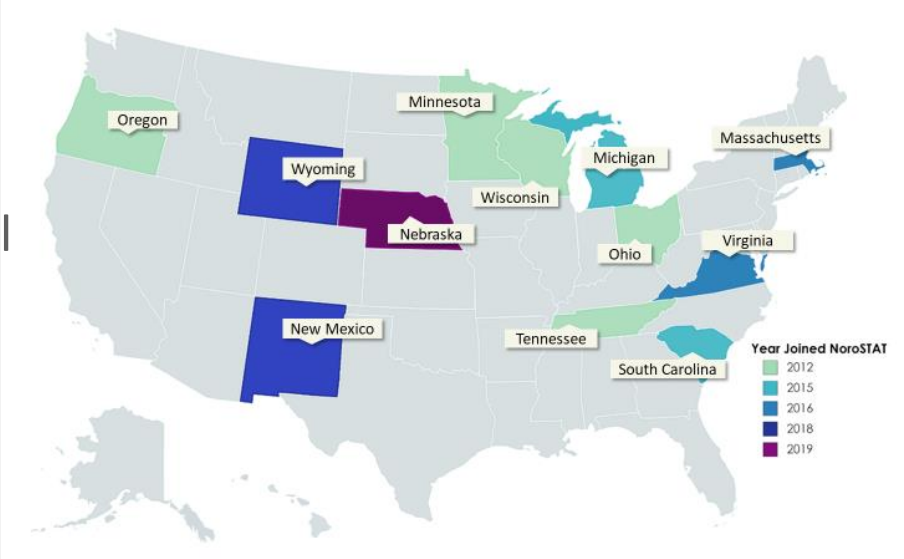
The estimates used outbreak data as source but are for all infections, both outbreak and sporadic

1998-20008 estimate from Painter et al, EID 2013 | 2019 estimate by IFSAC (Interagency Food Safety Analytics Collaboration)

NATIONAL CENTER FOR IMMUNIZATION AND RESPIRATORY DISEASES (NCIRD)

Norovirus Sentinel Testing and Tracking (NoroSTAT)

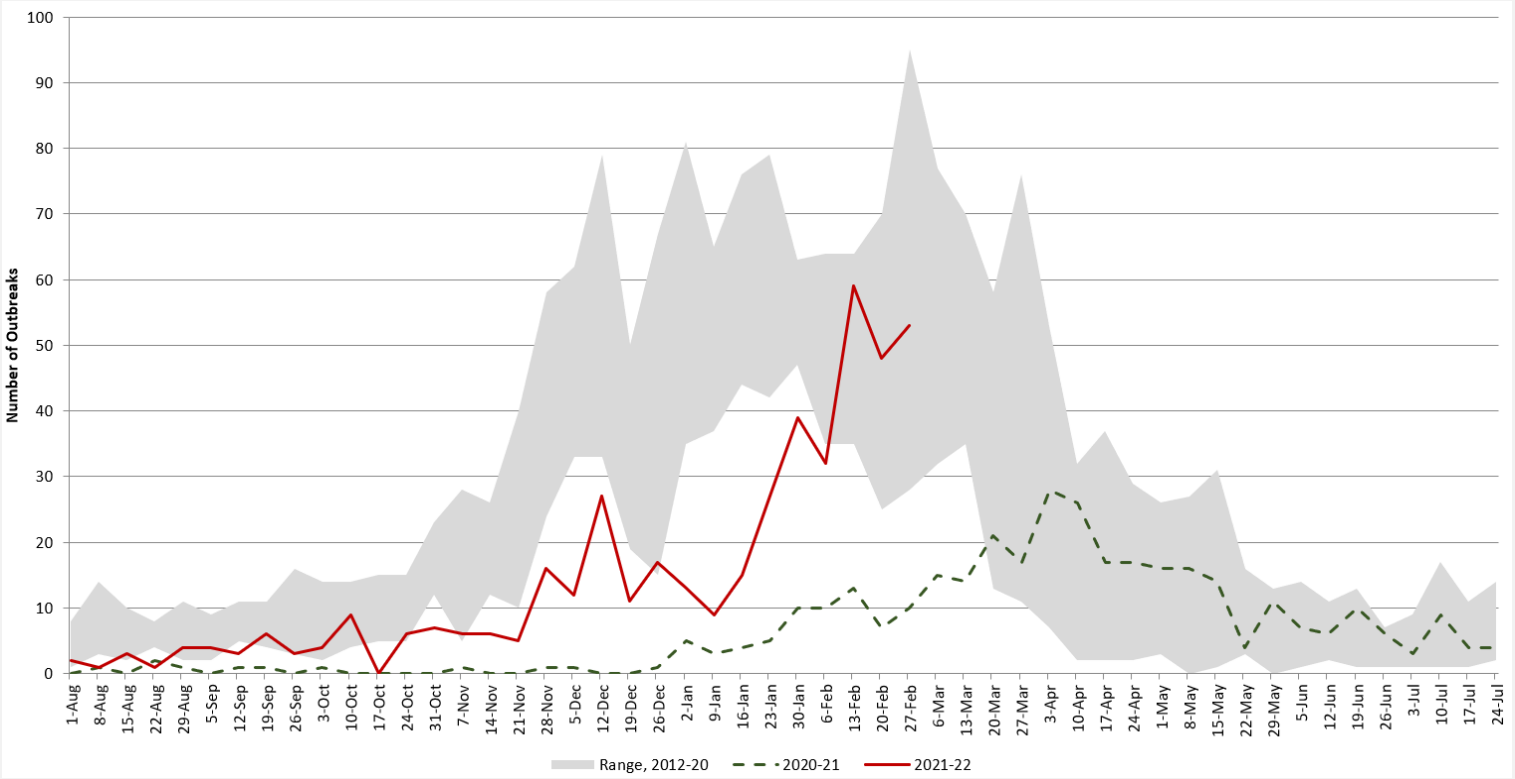
- Near-real time reporting of norovirus outbreaks by network of 12 sentinel states
  - Selected sites provide broad national coverage
  - Rapidly assess the impact of emergent strains
  - Improved timeliness, completeness, and linking of outbreak reports in NORS and CaliciNet



Leshem 2013 EID
Shah 2017 MMWR

Norovirus Outbreaks Reported to NORS by NoroSTAT, August 2012- March 2022

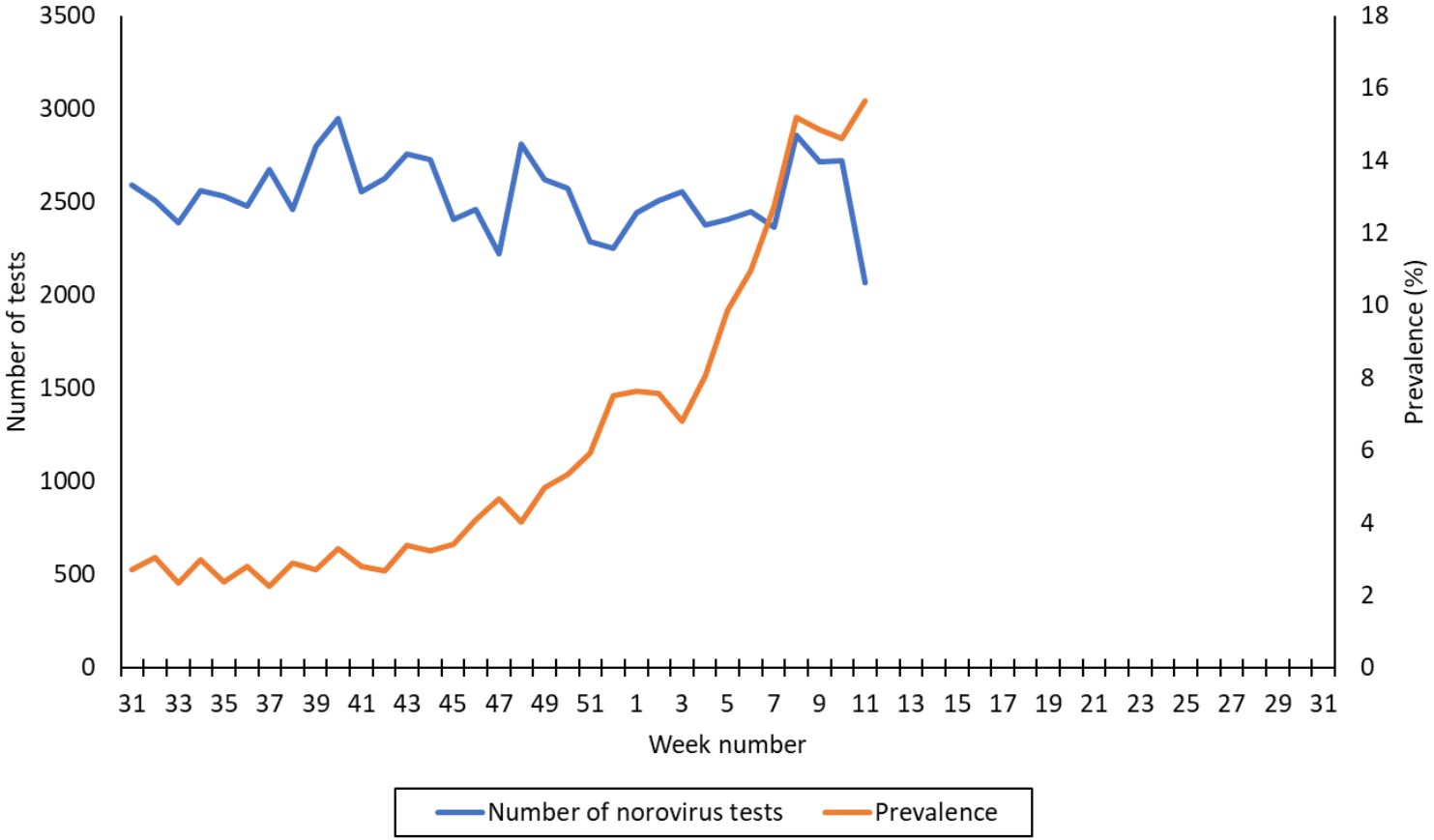
www.cdc.gov/norovirus/reporting/norostat/data.html



www.cdc.gov/surveillance/nrevss

- Voluntary clinical laboratory-based surveillance system
- Prospectively monitor respiratory and enteric virus activity in the U.S. since 1989
  - Respiratory: respiratory syncytial virus, human parainfluenza viruses 1-4, human metapneumovirus, rhinovirus, respiratory adenoviruses, enterovirus, influenza
  - Enteric: rotavirus, enteric adenovirus, **norovirus (added in July 2018)**
- Collects aggregate weekly numbers of tests conducted and tests positive
  - Participating laboratories spend approximately *five minutes* per week to report the required data for this surveillance system
  - Can be reported through web-based portal directly by clinical labs or via state health department “pass through”

Figure 1: Number of tests conducted and norovirus prevalence, all states, Aug 2021–Mar 2022



Multistate norovirus outbreak linked to raw oysters, 2022

- Multistate norovirus outbreak linked to raw oysters from British Colombia reported late March: Norovirus Outbreak Linked to Raw Oysters from British Columbia - Norovirus (cdc.gov)
- As of April 6, at least 103 illnesses reported and 13 states affected

HEALTH

A norovirus outbreak is linked to raw oysters distributed in 13 states, the FDA says

April 6, 2022 · 10:09 PM ET

NPR STAFF

ith federal, state, and local officials to investigate a multi-state outbreak of norovirus illnesses linked to
ncy said Wednesday.

Raw Oysters and Norovirus

If eaten raw, oysters and other filter-feeding shellfish can contain viruses and bacteria that can cause illness or death. Anyone who consumes raw shellfish is at risk of contracting norovirus. Children younger than five years old, the elderly, and those people with weakened immune systems are more likely to have severe infections. Food contaminated with norovirus may look, smell, or taste normal. To avoid food poisoning from oysters, cook them well to a temperature of at least 145 degrees F.