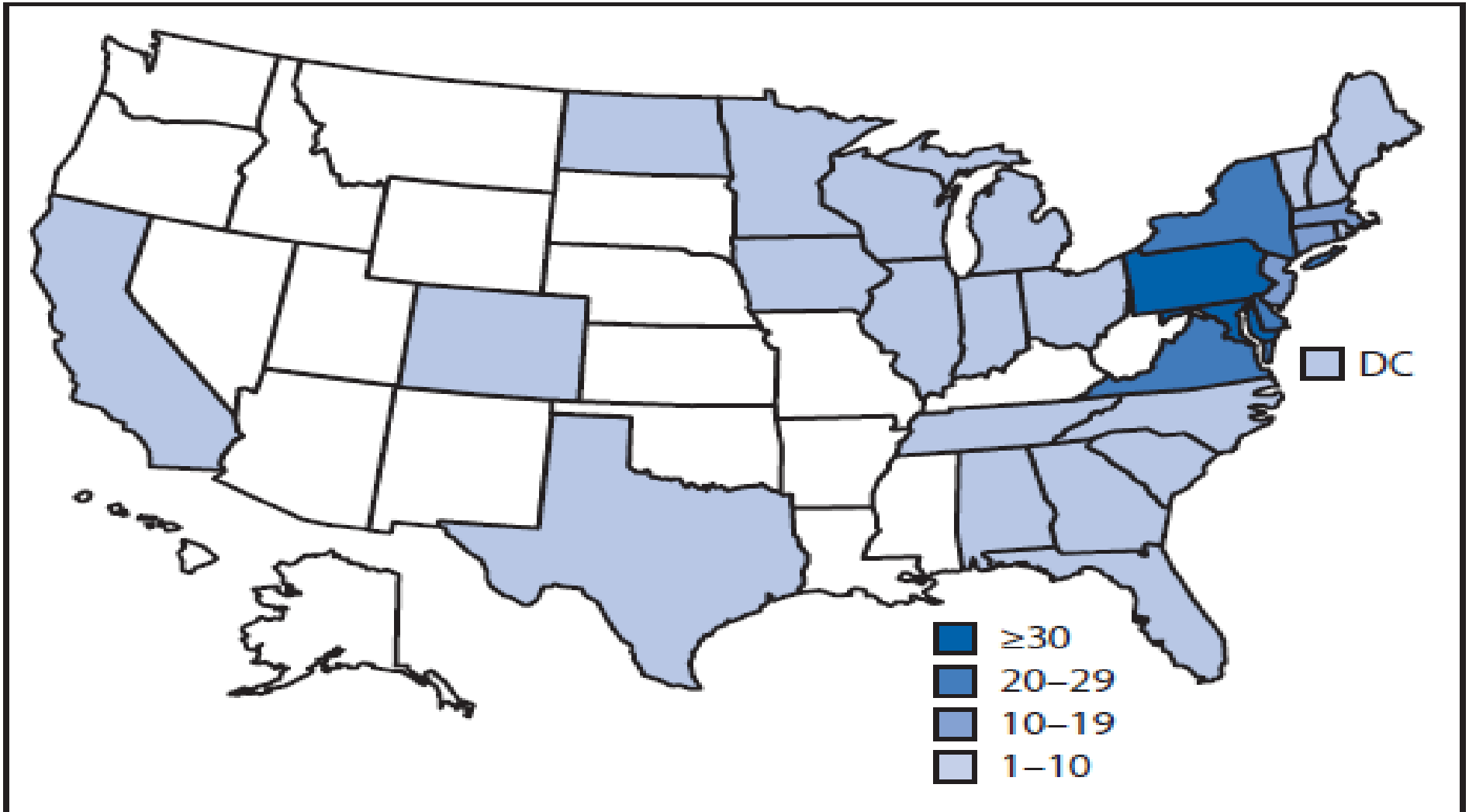
Plan to Assess and Prevent Produce Associated Illnesses from the Delmarva Region (Delaware, Maryland, and Virginia)

Number of persons (N = 275) infected with the outbreak strain of *Salmonella* Newport, United States, May 20–September 30, 2014



S. Newport

- 29 states with illnesses (every state from Maine to Florida), from May to September, and outbreaks since 2002 indicate:
  - Widespread prolonged contamination

S. Newport

- Increased markedly since 1995
- 3rd most common serotype
- Common in Delmarva (Delaware, Maryland, Virginia) Peninsula

History of Tomato *Salmonella* Outbreaks in the U.S.

Year	Serotype	# of Cases
1998	*S.* Baildon	86
2000	*S.* Thompson	29
2002	*S.* Newport*	512
	S. Newport	12
	S. Javiana	90
2004	*S.* Javiana	471
	S. Braenderup	123
2005	*S.* Newport*	71
	S. Braenderup	76
	S. Enteritidis	77
2006	*S.* Newport*	107
	S. Typhimurium	186
2007	*S.* Newport*	57
2008	*S.* Saintpaul (tomatoes?/peppers)	1442
2010	*S.* Newport (suspected)**	46

All S. Newport PFGE pattern 61

Source of tomatoes was Eastern Shore, VA

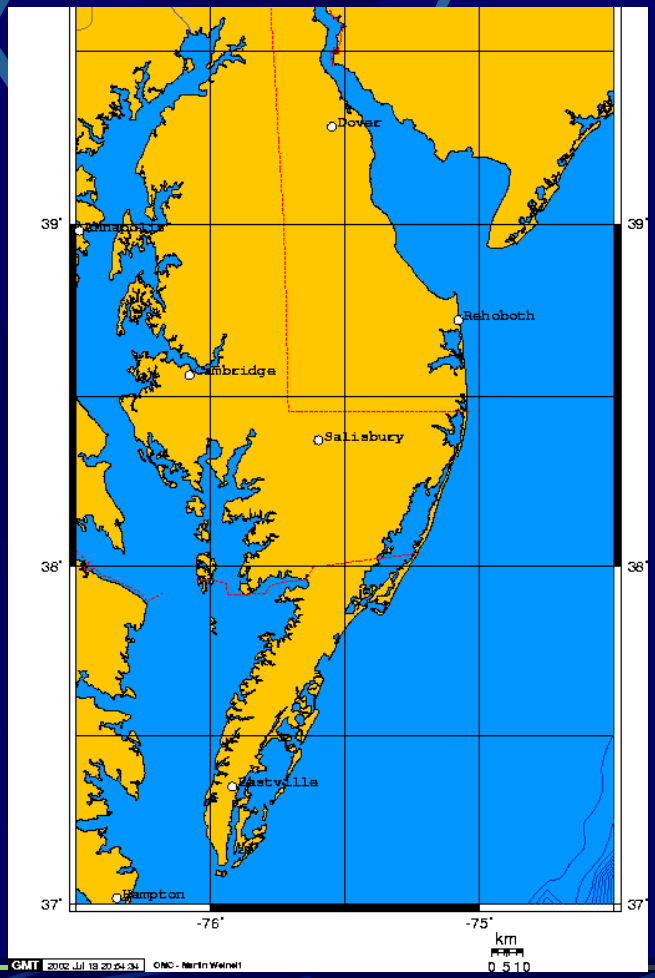
*Same PFGE pattern
FDA data

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Source: Seth Levine, VA Dept. of Health. From annual PulseNet meeting, September 2011

Delmarva Peninsula

- Bordered by Chesapeake Bay and Atlantic Ocean
  - Tourism popular
- Farming is main industry
  - Area produces large quantities of tomatoes and other produce
  - Delmarva area contains numerous chicken farms

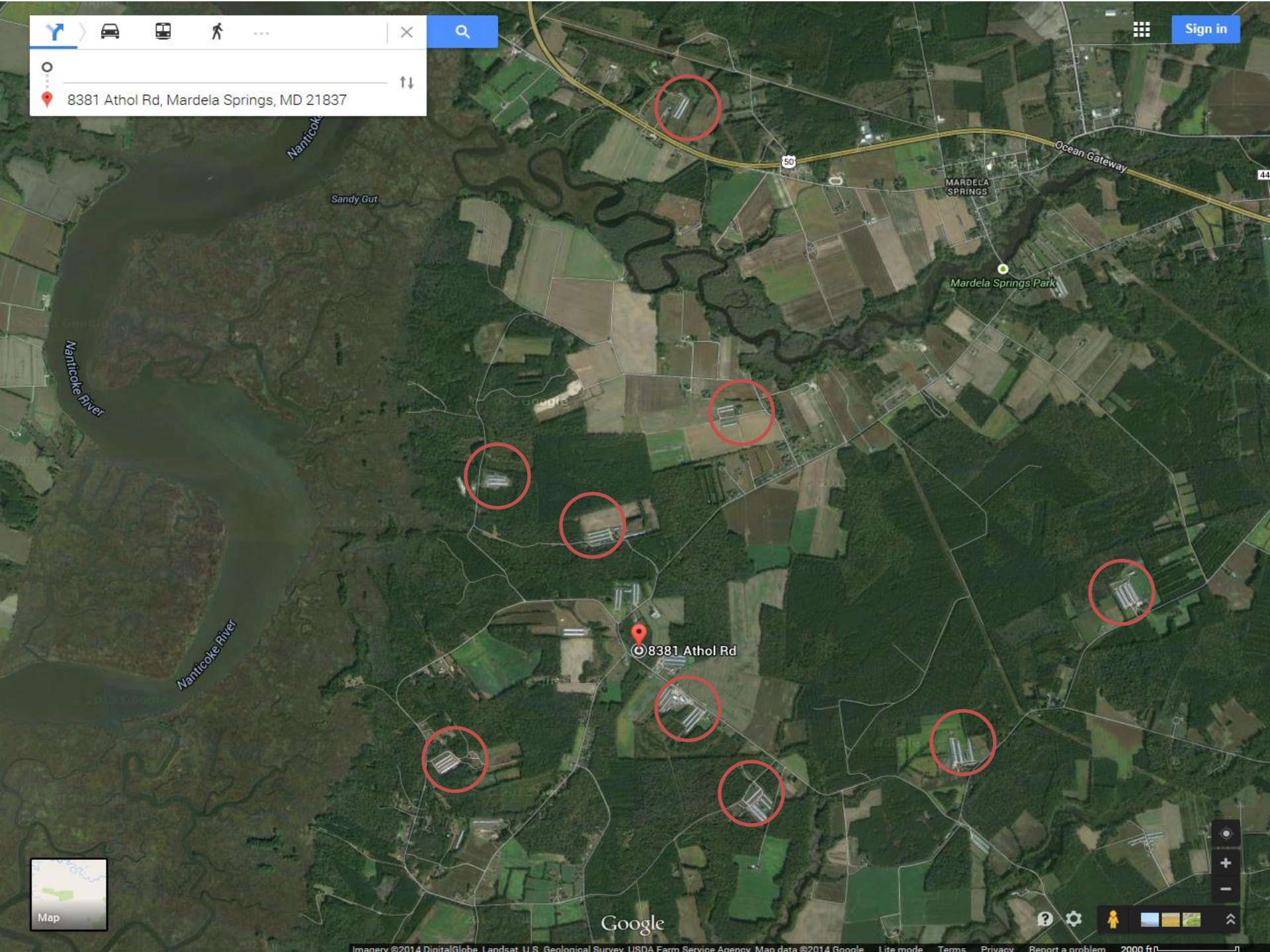


Delmarva 2014

- Annual broiler/roaster/ Cornish production 569,000,000
- Total pounds 3,742,500,000
- Number of houses 4,761
- Growers 1,564
- Wholesale value $3,176,000,000

Outbreaks

- Prior outbreaks linked most strongly to tomatoes
- Recent outbreak (June-September 2014) linked to cucumbers grown in same region
  - 275 S. Newport cases
  - Cluster of cases all ate cucumbers grown from same farm in MD
- With Salmonella, CDC estimates 29 cases for every case reported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Imagery ©2014 DigitalGlobe, Landsat, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2014 Google
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Prior Research

- Traceback investigation of 2005 outbreak found pond used to irrigate tomato fields contained implicated strain of S. Newport
  - Geese and turtles have been observed in ponds
- Wildlife investigated as potential source (Gruszynski et al. 2011)
  - Samples taken from area where Seagulls were present
  - S. Newport isolated from 1 avian sample and 11 environmental samples
  - Suggests birds may be source of S. Newport strain affecting Eastern Shore

Next Steps

- Action needed!
- Identify and address root causes
- Investigate role poultry and farming industry play in the recurrence of illness
- Work with industry and farmers to address any issues related to manure and contaminated water

2014 After Action

- Outbreaks keep happening from produce from this area
- Large scale contamination (29 states) throughout harvest season likely from multiple farms and produce
  - Poultry manure contamination occurs in this area. Is illness also occurring from S. Enteritidis, S. Heidelberg, S. Typhimurium and Campylobacter?
    - (Salmonella and Campy tend to peak in August)

2014 After Action

- Cucumber farm reportedly met Good Agricultural Practices (GAP) standards in spreading uncomposted chicken litter in March
  - (120 days prior to harvest)
  - Raises question as to adequacy of standards
- What will be done to keep illness from happening again?
  - Minimum of safe water and composted/safe manure
  - If still happens…
- Should ready-to-eat produce be grown?

Drive Corrective Action

- RI plans to test 20 produce samples (tomatoes, cucumber, leafy greens) every 2 weeks from Delmarva
- If S. Newport or Javiana cases occur, test produce from home and source
- 6 states say will also test
- Industry invited to join testing
- If not testing, may receive suspect products

- Insanity: doing the same thing over and over again and expecting different results.

Albert Einstein

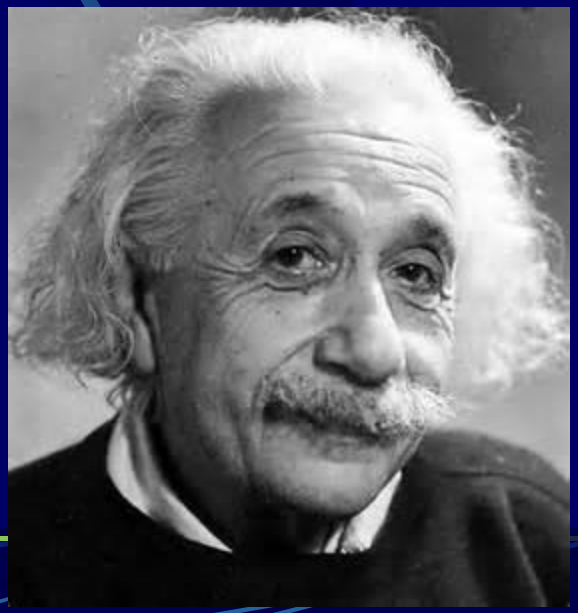
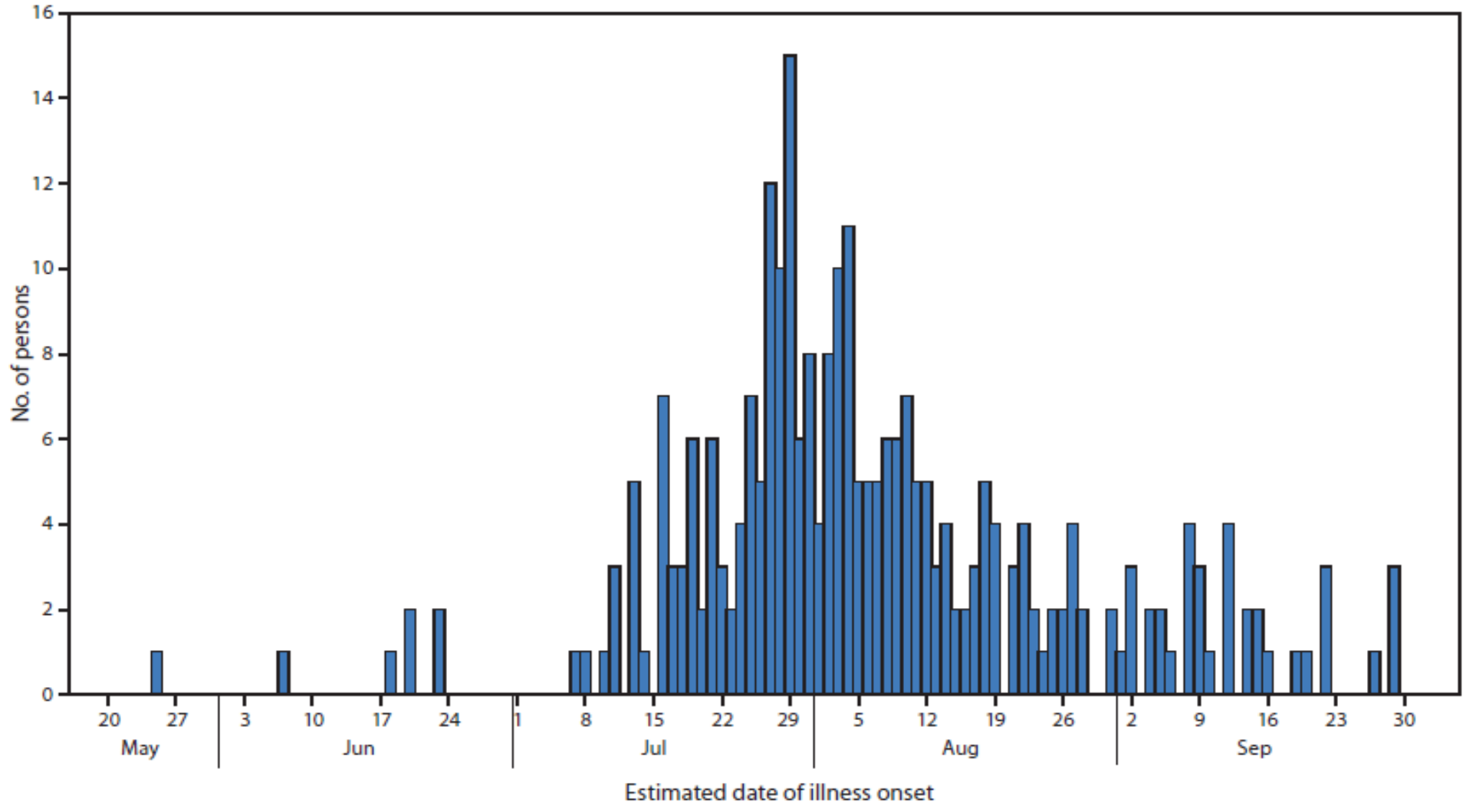


FIGURE 2. Number of persons (N = 275) infected with the outbreak strain of *Salmonella* Newport, by estimated date of illness onset — United States, May 20–September 30, 2014



Goals

- Prevent illnesses, hospitalizations and deaths from tomatoes, cucumbers and other produce from the Delmarva area (Delaware, Maryland, Virginia) where tomatoes have been implicated in Salmonella Newport outbreaks since at least 2002.

Goals

- Drive correction of environmental hazards leading to outbreaks.
- Determine if Good Agricultural Standards (GAP) are sufficient to protect public health since cucumbers from a Gap certified farm were reportedly implicated in the Salmonella outbreak in 2014.

Goals

Since poultry waste is a major likely source of produce contamination in the Delmarva area, determine whether produce is also causing illness due to other common pathogens associated with poultry such as Salmonella Enteritidis, S. Typhimurium, S. Heidelberg and Campylobacter in addition to S. Newport and Javiana.

Tactics
Testing Delmarva Produce for Salmonella and Campylobacter

- Determine where past matching Salmonella Newport and Javiana cases occurred, and sample their source of produce.
- For 2015 matching cases, immediately sample produce from their home and place of purchase.
- Sample distributors purchasing produce from Delmarva

Tactics

- Use USDA produce sampling guidelines for sample size and handling
- Obtain invoice and other source info at time of sampling
- Take pictures of boxes and other source containers upon sampling

Tactics

- If positive samples are obtained, immediately notify all states involved, FDA, CDC, and USDA and recall product
- Conduct traceback
- Increase sampling from a positive farm – determine if GAP certified
- Determine if there are PFGE matching illnesses
- Request Whole Genome Testing

Tactics

- Enter sample results into ElexNet and FoodShield
- Conduct after action review
  - Identify lessons learned
  - Identify next steps to prevent illnesses from Delmarva produce, e.g.
    - Only purchase from GAP certified farms
    - Test GAP certified produce

Effect

- Produce Marketing Association asked Virginia Tech and Univ. of Delaware Cooperative Extension to notify farmers of sampling and motivate Good Agricultural Practices
- Recommend GAP plus testing of produce suppliers
  - No matter what the source

Delmarva Action Plan Being Developed

- Discussed so far:
  - Increased water sampling
  - Produce sampling
  - Education of growers and packers
  - Working with universities concerning research

What You Can Do

- Investigate all cases quickly
  - Organic consumption as a risk factor?
- Rapid traceback to source
- Rapid notification of FDA and CDC
- Research needed
  - Manure use and disposal
- Determine high versus low risk criteria that can be used to evaluate produce safety anywhere

High Risk Farms Crops Consumed Without a Kill Step and

- Outbreak or suspect in outbreak
- Use untreated surface water for irrigation or wash water
- Use raw chicken or other manure
- High volume
- Positive samples

Low Risk Farms

- Crops not for food or will have a kill step
- Use safe water for irrigation and wash water
- No use of raw manure on crops where there will be no kill step
- Good Agricultural Practices (GAP) certified
- Products tested and safe

Questions?