



PUBLIC HEALTH AGENCY *of* CANADA
AGENCE DE SANTÉ PUBLIQUE *du* CANADA

**Multi-Jurisdictional Outbreak Investigation Case Study
Ontario Symposium - March 2, 2010**



Public Health
Agency of Canada

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Canada 

Play
like
girls.



G. Clement
January 2017-06

Outline

- Fictional scenario based on real outbreaks
- Short slide presentations followed by
 - audience polls
 - panel discussion
 - audience discussion

Goal

- To generate discussion and increase understanding of:
 - Key decision points
 - Weight of evidence for action
(e.g., establish OICC, next steps in investigation, regulatory activities, public communication)
- Use protocols to guide collaboration

Objectives

At the end of the case study participants should be able to:

- Recognize indicators of multi-jurisdictional outbreaks
- Identify and engage partners as appropriate
- Describe how, when, why to establish OICC
- Identify when to brief Senior Management
- Discuss criteria to weigh the evidence for action
- Apply weight of evidence to communications decisions

Setting the Stage/guiding principles

- Open discussion
- Complex issues, various shades of gray with no right or wrong answer
- Respect perspectives of different partners
- Don't fight the scenario

The background features a light purple-to-white gradient. On the right side, there is a stylized, light purple graphic of a person with arms raised, standing on a curved base. To the left of the person is a crown-like shape. The text 'Part 1' is centered in the middle of the page.

Part 1

Outbreak Detection: Health Unit A

Thu Apr 9:

- CD Manager notes increase in Salmonellosis
- 4 S. Oranienburg cases in Mar, expect 5/year
- Previous outbreaks linked to:
 - chicken, chocolate, black pepper, cuttlefish chips, cantaloupe, catered sandwiches

Outbreak Detection: Health Unit A

- iPHIS case data:
 - 4/4 female
 - Mean age 28 yr (range, 3 to 57 yr)
 - 3 yr old hospitalized but recovered
 - Symptom onsets Mar 3 - 29
 - 2 ate chicken; 1 at Quacker Jack's, 1 at home
 - 2 'unknown' exposure
- Enteric follow up forms:
 - Limited food histories but 2 ate at popular Chinese style buffet restaurant on different dates

Audience poll

The background features a light purple and white color scheme with abstract, stylized human figures in various poses, suggesting a community or audience.

- Would you post a Public Health Alert?
 - Yes
 - No
 - Don't know

Audience poll

The background features a light blue and white color scheme with abstract, stylized human figures in shades of blue and grey. One figure is prominent on the right side, appearing to be in a dynamic, possibly dancing or reaching pose. The overall aesthetic is clean and modern.

- Would you contact the Ontario MOHLTC?
 - Yes
 - No
 - Don't know

Audience poll

The background features a light blue and white color scheme with abstract, stylized human figures in various poses, suggesting movement and interaction. The figures are rendered in a simple, rounded style with no facial features.

- Managers and Front Line Staff, would you brief Senior Management at Health Unit A at this point?
 - Yes
 - No
 - Don't know

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Questions

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Part 2

Outbreak Detection

The next day...

- OAHPP Public Health Laboratory contacts the MOHLTC
- Increase in *S. Oranienburg* isolations
 - 11 isolates from Mar 10 - Apr 9 in 6 health units
 - Expect 3 isolates in province over this time period

Audience poll

The background features a light blue and white abstract design. On the right side, there are stylized human figures in a light blue color, appearing to be in motion or interacting. The overall aesthetic is clean and modern.

- Is this a multi-jurisdictional outbreak?
 - Yes
 - No
 - Don't know

Audience poll

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- Should the MOHLTC post a Public Health Alert at this point?
 - Yes
 - No
 - Don't know

Audience poll

The background of the slide features a light blue, stylized graphic of several human figures in various poses, suggesting movement or a group of people. The figures are composed of simple shapes like circles for heads and curved lines for limbs, set against a light blue gradient background.

- Should an Ontario Outbreak Investigation Coordinating Committee (OOICC) be established at this point?
 - Yes
 - No
 - Don't know

The background features a light purple and white color scheme. On the right side, there is a stylized silhouette of a person with arms raised, and above it, a crown-like shape. The overall design is minimalist and modern.

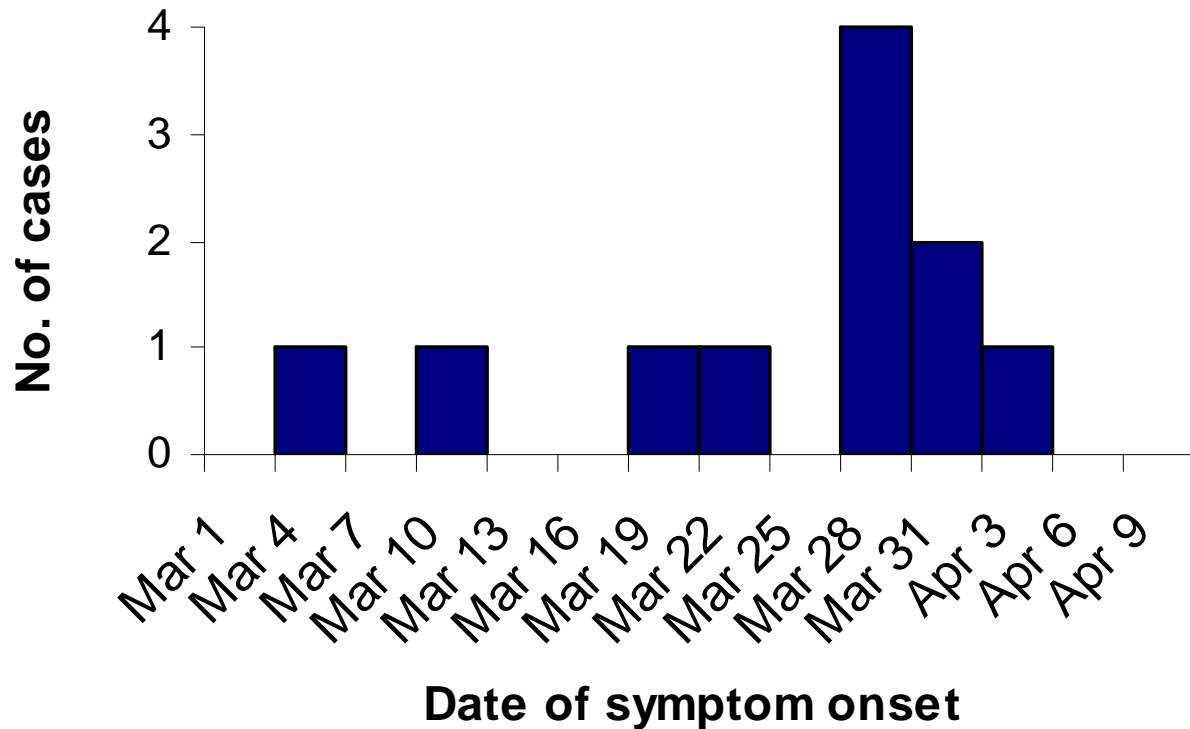
Questions

Provincial Assessment

As of Mon Apr 13:

- 11 cases
- 6 health units
- 73% female
- Mean age, 32 yr
(range, 3 to 57 yr)
- 1 hospitalized
- 0 deaths

No. cases S. Oranienburg by date of symptom onset (n=11)



Provincial Assessment

The background features a light blue, stylized graphic of human figures in various poses, suggesting movement or a community. The figures are composed of simple shapes like circles for heads and lines for limbs, set against a white background with light blue curved accents at the bottom.

Routine enteric case interviews:

- 5 cases – no routine interview conducted
- 6 cases – 3 different styles of interview conducted
 - 0/6 report travel during exposure period

Provincial Assessment

Of 6 cases with exposure information:

- 4 cases from Health Unit A
 - 2 ate at Chinese style buffet restaurant
 - 3 ate chicken – 1 at home, 2 at different restaurants
 - 2 ate cantaloupe
 - 2 ate pre-packaged leafy greens; type not specified
 - 2 have dogs

Provincial Assessment

The background of the slide features a light purple and white color scheme. On the right side, there are stylized, semi-transparent human figures in various poses, suggesting movement or a group of people. The overall design is clean and professional.

Of 6 cases with exposure information:

- 1 case from Health Unit B
 - Chicken burgers at home
 - Various produce items including lettuce and several unspecified fruit and vegetable salads
 - Pet turtle

Provincial Assessment

Of 6 cases with exposure information:

- 1 case from Northern Health Unit C
 - *Salmonella* shotgun questionnaire assessing >100 exposures
 - Case reported rarely eating out, few snack foods and meats, reported generally healthy foods including chicken, dairy products, nuts, and various produce items including romaine lettuce, spinach, tomatoes eaten at home, fruit salad containing melons.

Provincial Assessment

- MOHLTC contacts PHAC to find out if there are increases in S. Oranienburg in other P/Ts
 - 1 isolate each in QC and NS over the last 4 weeks
 - No increase outside Ontario

Provincial Investigation

- On Mon Apr 13 the MOHLTC:
 - Posts a Public Health Alert
 - Requests interview of all cases of S. Oranienburg identified since Mar 1 with *Salmonella* 'shotgun'
 - Notifies partner agencies of OOICC teleconference

Audience Poll

- Managers and Front Line Staff, would you brief/update Senior Management at this point?
 - Yes
 - No
 - Don't know

Audience Poll

The background features a light blue and white color scheme with abstract, stylized human figures in shades of blue. One figure is prominent on the right side, with arms raised, suggesting a celebratory or active atmosphere. The overall design is clean and modern.

- Directors and Medical Officers, would you want to be briefed/updated at this point?
 - Yes
 - No
 - Don't know

Audience Poll

- Would you include CFIA and OMAFRA in the OOICC at this point?
 - Yes
 - No
 - Don't know

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Questions

Audience Poll

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- Does the public need to be informed?
 - Yes
 - No
 - Don't know

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Questions

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Part 3

PulseNet Discussion Board

Wed Apr 15:

- ON posts PFGE results
 - 10/11 isolates have indistinguishable PFGE patterns
 - 1 isolate with different pattern is excluded from outbreak
- National Microbiology Laboratory indicates PFGE pattern is rare (1 recent match in NS, 2 in QC)
- QC reports 2 more S. Oranienburg with PFGE pending

PHAC Assessment

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- PHAC requests QC and NS case information
 - 4/5 cases female
 - Ages ranged from 7 to 60 yrs
 - Symptom onsets Mar 18 - Apr 3
 - No travel to Ontario

Audience Poll

Which of the following statements is true:

- a) Isolates with indistinguishable PFGE patterns may have originated from a common source
- b) Isolates with the same PFGE pattern are always related to a common outbreak
- c) Isolates with different PFGE patterns are never related to a common source

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Questions

Audience Poll

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At this point, who do you feel should lead the outbreak investigation?

- a) Local health units
- b) CFIA
- c) PHAC
- d) MOHLTC

Audience Poll

Which of the following are objectives of a national OICC?

- a) To harmonize external communications
- b) To provide training in outbreak response
- c) To serve as the central point to collect, analyze and share information
- d) Both A and C

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Questions

National OICC

- Teleconference booked for following day (Thu Apr 16)
- PHAC leads
- OICC includes:
 - PHAC Communications, NML, CFIA, HC, provincial/territorial representatives

National OIICC

- PHAC epidemiological summary (n=21):
 - 12 confirmed cases; 9 ON, 2 QC, 1 NS
 - 9 probable cases; 4 ON, 2 QC, 2 NS, 1 NB
 - 3 hospitalized, 1 died
 - 15 (71%) female
 - Mean age, 33 yr (range, 3 – 60 yr)
 - Symptom onsets Mar 6 - Apr 8
 - 10 cases with 4 different types of exposure information; predominantly healthy eaters, lots of produce items

National OICC

Update from Ontario:

- Completed 4 hypothesis-generating interviews
 - 3/4 cases reported leafy greens
 - 1 case ate unknown type in mixed salad
 - 2 recalled eating romaine lettuce and spinach; pre-packaged in plastic containers, brand not known
- Non-intact sample of spinach from case home tested positive for *S. Oranienburg*

Audience poll

Is the weight of evidence for pre-packaged spinach as the source of the outbreak:

- a) Strong
- b) Moderate
- c) Weak

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Questions

Audience poll

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- Do you feel there is enough evidence to recall the spinach?
 - Yes
 - No
 - Don't know

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Questions

Audience poll

What would be your public communications strategy at this point:

- a) No public communication
- b) Notify public and provide general food safety advice
- c) Notify public and provide messaging specific to leafy greens
- d) Notify public and provide messaging specific to spinach

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Questions

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Part 4

National Case-Control Study

- Hypothesis-generating interviews completed with:
 - 2 cases in QC
 - 1 case in NS
 - 3 cases in ON
- Pre-packaged spinach is leading hypothesis
- Implement case-control study to:
 - Test hypothesis that spinach is source
 - Identify specific brand(s)
 - Obtain product and purchase details for traceback

National Case-Control study

Methods:

- Include confirmed cases
- 3 controls per case
 - Match by age and geographic area
 - Select by reverse directory lookup
- Structured, targeted questionnaire focusing on foods frequently reported by cases:
 - Spinach, romaine lettuce, chicken cooked at home, cantaloupes and strawberries

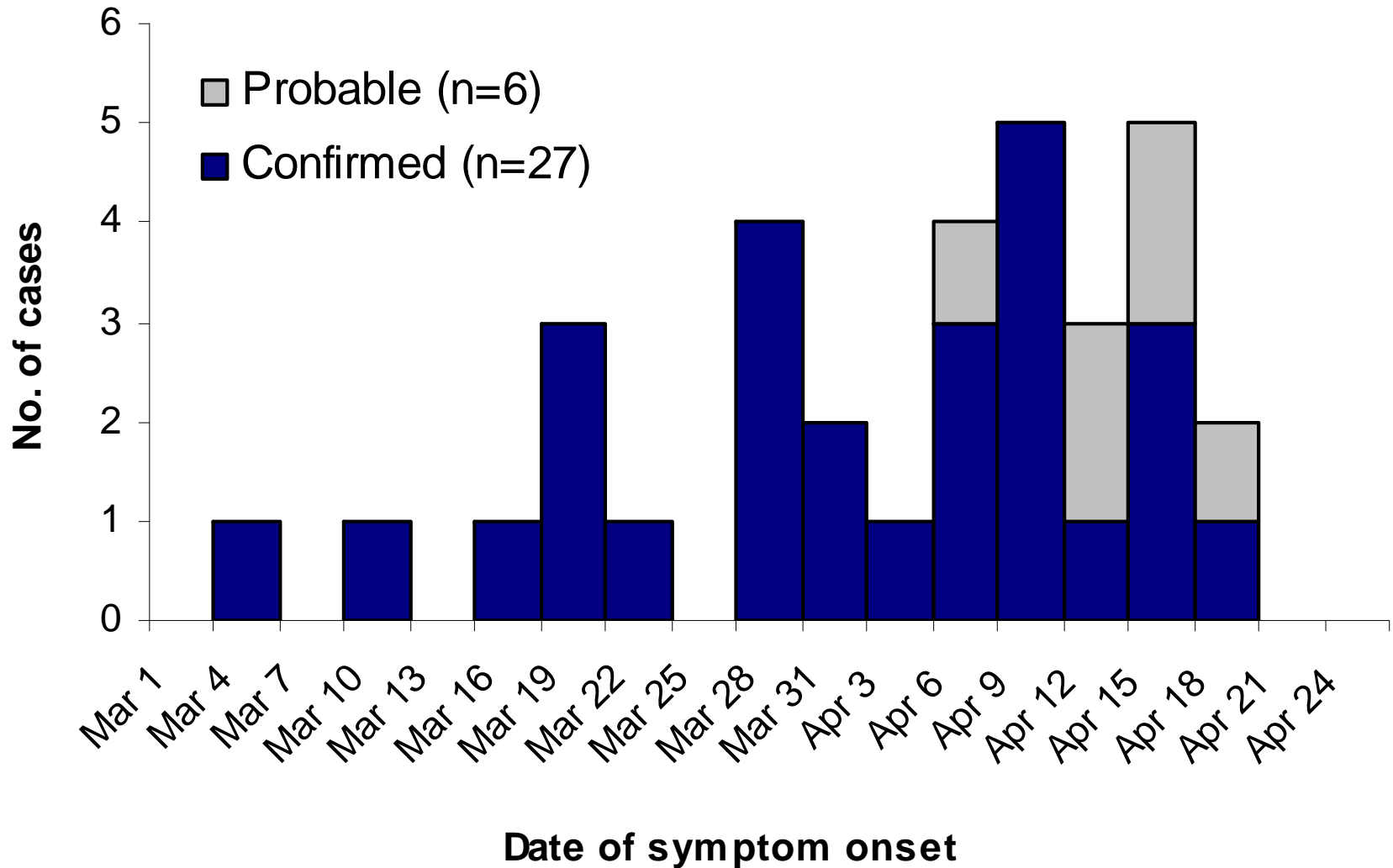
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9 days later...Tue Apr 28

National OICC (9:00am)

- PHAC epidemiological summary (n=33)
 - 27 confirmed, 6 probable in ON, QC, NS, NB
 - 4 hospitalized, 1 died
 - 24 (73%) female
 - Mean age, 37 yr (range, 3 – 72 yr)
 - No reported cases in US
 - No restaurant or institutional clusters

No. of outbreak-related cases of S. Oranienburg by symptom onset, Canada, Mar 1-Apr 26, 2009 (as of Apr 28, 2009)



National OICC (9:00am)

Results of national case-control study

Exposure	Cases	Controls	Matched OR	p-value
Chicken at home	20/25 (80%)	58/74 (78%)	1.9	0.48
Romaine lettuce	16/25 (64%)	43/72 (60%)	1.3	0.65
Strawberries	14/24 (58%)	31/73 (42%)	2.0	0.10
Cantaloupe	9/23 (39%)	24/75 (32%)	1.2	0.26
Spinach	19/25 (76%)	29/72 (40%)	3.4	0.04

- Among 19 cases who reported eating spinach:
 - 9 reported Big Brand X spinach
 - 3 reported Big Brand Y spinach
 - 7 could not recall the brand
- Pre-packaged in plastic container

National OICC (9:00 am)

- Common Ontario distributor identified by receipts from 2 cases at institutions
 - Packages and distributes Big Brand X & Y
 - Shelf life is 5-7 days from date of packaging
- Additional open and closed samples from homes and retail tested negative

National OICC (9:00am)

Preliminary CFIA investigation:

- Document review, telephone inquiries to distributor
- No deviations to process or controls in Feb or Mar
- No complaints recorded by distributor
- Brand X and Y are distributed in ON, QC, the Atlantic Provinces, US Northeast states
- Spinach supplier has a testing program for *E. coli* O157:H7 and *Salmonella*; certificates of analysis provided with spinach shipments
- CFIA inspection team is being dispatched to conduct in-depth food safety investigation

Audience poll

Is the weight of the evidence for pre-packaged spinach distributed by the Ontario establishment as the source of the outbreak:

- a) Strong
- b) Moderate
- c) Weak

Audience poll

The background features a light blue and white color scheme with abstract, stylized human figures in shades of blue and grey, suggesting a group or audience.

- Do you feel there is enough evidence to recall the spinach?
 - Yes
 - No
 - Don't know

Audience poll

- What message needs to get to the public at this point:
 - a) No additional messaging (general food safety advice only)
 - b) Messaging specific to spinach
 - c) Messaging specific to Big Brand X & Y spinach

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Questions

National OICC Reconvenes (5:00pm)

- CFIA inspectors report that:
 - Establishment well organized
 - No deviations to the process and controls
 - However, ceiling over the packaging line is damaged and product could have become contaminated by dripping water
- Based on evidence presented, firm recalls all product on market
- CFIA issues health hazard alert to inform public
- PHAC Comms coordinates updated messaging

Outbreak Ends

- Packaged product and food contact surfaces on packaging line test negative
- Distributor moves packaging operation to another part of the facility until ceiling repaired
- Additional few cases reported over following two weeks and no more
- National OICC declares outbreak over and hosts debrief

The background features a light blue gradient with stylized, semi-transparent graphics. On the right side, there is a silhouette of a person with arms raised, and a large, multi-pointed star shape is positioned to the left of the person. The overall aesthetic is clean and modern.

Closing Remarks