

# OAHN Calf Surveillance Project Update

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# Outline

- Update on calf submissions
- Summary of findings
- Utility of calf post-mortems
- Incorporating the learnings into practice
- Update on Salmonella Dublin in Ontario

# Calf project – summary of submissions:

Number of calves	108 (13 producer with 2 calves each)	
Number of veterinarians	46	
Number of practices	34	
Number of calves per vet	1 to 10	
Calves by commodity	Dairy	52 calves
	Cow-calf	25 calves
	Veal	14 calves
	Impossible to figure out	10 calves
Number submissions with S Dublin	2 calves /submissions	1 dairy, 1 veal High fever. Septicemia. Culture of lung (1), lung & spleen (1)

# Issues to think about re PM and lab work:

- From the pathologist – “the basic submissions (see video) will give you a diagnosis of 99% of the important diseases”
- No BVD
- A few *M bovis* – mostly confirming PM lesions seen
- Check for E/SE deficiency, especially in diarrhea cases
- Septicemia was common – artifact of sampling? Navel infections?
- 1 weirdo – 2 month old poor doer with liver fibrosis, bile duct hyperplasia and cholestasis (great lesion) with no id'd cause
- The rest – all a range of what happens commonly, yet submitted for a reason? High morbidity? High mortality? Poor response to therapy to date? Suspect S Dublin?
- All – could have improved prevention in place.

# Utility of calf post-mortems

- Based on vet comments they:
  - Redirected investigations
  - Resulted in changed therapies (or less therapy)
  - Lead to more targeted investigations on farm
  - Lead to more laboratory testing at AHL
  - Revealed zoonotic infections and human risk (S Dublin, VETEC, Crypto)
- Most importantly – lead to better preventive practices recommended to producers.

# How can these learnings be used in future?

- Can/should calf post-mortems be done more often?
  - Calf problems are prevalent
  - Diagnoses lead to timely warnings and changes
  - Looking a justification for antibiotic use
- How can this be done in daily practice?
- What are the “bottle-necks” for doing more calf post-mortems?

Post-mortem video:



Salmonella Dublin



Salmonella Dublin – Ontario to date.....

Salmonella Dublin, Ontario, as of Dec 1st 2017  
 28 unique locations (about 59 cases/submissions)

	<b>Farms by year (All)</b>	Veal cases by year All	<b><u>New</u> veal farms by year</b>	Dairy farms with cases All	<b><u>New</u> dairy farms by year</b>
<b>2012</b>	<b>1</b> (beef calf on a dairy farm)	0	<b>0</b>	0	<b>0</b>
<b>2013</b>	<b>0</b>	0	<b>0</b>	0	<b>0</b>
<b>2014</b>	<b>1</b>	2	<b>1</b>	0	<b>0</b>
<b>2015</b>	<b>9</b> (1 unkn commodity)	10	<b>7</b>	1	<b>1</b>
<b>2016</b>	<b>9</b>	15	<b>4</b>	5	<b>3</b>
<b>2017</b>	<b>13</b>	2	<b>1</b>	13	<b>8 (+1)*</b>
<b>Total</b>			<b>12</b>		<b>12</b>

\* Dairy heifer raiser

# Considerations:

- Zoonotic disease
- Transmitted from calves, manure, contaminated premises, raw milk.


**For immediate release:**

Oct. 6, 2017

WASHINGTON STATE DEPARTMENT OF AGRICULTURE

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This news release is also available as a **PDF**.

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## WSDA suspends raw milk dairy processing license

**OLYMPIA** — The Washington State Department of Agriculture (WSDA) today suspended the milk

Salmonella can cause serious and sometimes fatal infections in humans. Young children, the elderly, and those with compromised immune systems are especially at risk. Symptoms include fever, diarrhea, nausea, vomiting, abdominal pain and, in some cases, arterial infections, endocarditis and arthritis. Anyone experiencing these symptoms should immediately contact a health care provider.

WSDA took the step of suspending the milk processing plant license for Pride and Joy after tests by the state Department of Health confirmed that the salmonella pathogens detected in the milk samples matched the unique strain, salmonella Dublin, identified in illnesses that hospitalized two people this past January.

In September, WSDA's laboratory detected the salmonella pathogen in samples from the dairy taken as part of the routine testing of all licensed raw milk dairy operations. Isolates from those samples were submitted to Department of Health for further testing, resulting in the confirmed linkage to the earlier salmonella illnesses.

# Epidemiology of *Salmonella enterica* Serotype Dublin Infections among Humans, United States, 1968–2013

R. Reid Harvey,<sup>1</sup> Cindy R. Friedman, Stacy M. Crim, Michael Judd, Kelly A. Barrett, Beth Tolar, Jason P. Folster, Patricia M. Griffin, Allison C. Brown

CDC paper published Sept 2017, Salm Dublin, human:

## Abstract

*Salmonella enterica* serotype Dublin is a cattle-adapted bacterium that typically causes bloodstream infections in humans. To summarize demographic, clinical, and antimicrobial drug resistance characteristics of human infections with this organism in the United States, we analyzed data for 1968–2013 from 5 US surveillance systems. During this period, the incidence rate for infection with *Salmonella* Dublin increased more than that for infection with other *Salmonella*. Data from 1 system (FoodNet) showed that a higher percentage of persons with *Salmonella* Dublin infection were hospitalized and died during 2005–2013 (78% hospitalized, 4.2% died) than during 1996–2004 (68% hospitalized, 2.7% died). Susceptibility data showed that a higher percentage of isolates were resistant to  $\geq 7$  classes of antimicrobial drugs during 2005–2013 (50.8%) than during 1996–2004 (2.4%).

**Table 1.** Demographics, international travel, clinical outcomes, and isolate source for *Salmonella enterica* serotype Dublin and other *Salmonella*, United States, 1996–2013\*

Patient characteristics	<i>Salmonella</i> Dublin, no. (%), n = 228	Other <i>Salmonella</i> , no. (%), n = 97,814	p value
Demographics			
Age group, y†			
<1	2/228 (0.9)	11,075/97,562 (11.4)	<0.01
1–4	13/228 (5.7)	16,481/97,562 (16.9)	<0.01
5–17	8/228 (3.5)	15,628/97,562 (16.0)	<0.01
18–64	119/228 (52.2)	43,819/97,562 (44.9)	<0.05
≥65	86/228 (37.7)	10,559/97,562 (10.8)	<0.01
Sex			
M	137/228 (60.1)	46,909/97,486 (48.1)	<0.01
F			
International travel	6/101 (5.0)	4,297/46,764 (8.6)	0.15
Clinical outcome			
Died	8/216 (3.7)	431/86,977 (0.5)	<0.01
Hospitalized‡	167/223 (74.9)	24,187/88,748 (37.3)	<0.01
Isolate source			
Blood	137/226 (60.7)	5,054/97,142 (5.2)	<0.01
Feces	49/226 (21.7)	8,6257/97,142 (88.8)	<0.01
Other	40/226 (17.7)	5,831/97,142 (6.0)	<0.01

\*Data from the Foodborne Diseases Active Surveillance Network.

†Median ages: *Salmonella* Dublin 55 (range <1–97) y; other *Salmonella* 23 (range <1–110) y; p<0.01.

‡Median hospital stays: *Salmonella* Dublin, 6 d (range 1–76 d); other *Salmonella*, 3 d (range 0–374 d); p<0.01.

**Table 2.** Antimicrobial drug resistance in *Salmonella enterica* serotype Dublin and other *Salmonella*, United States, 1996–2013\*

Resistance pattern	<i>Salmonella</i> Dublin, no. (%), n = 102	Other <i>Salmonella</i> , no. (%), n = 33,415
Pansusceptible	42 (41)	26,552 (79)
Resistant to $\geq 1$ class	60 (59)	6,863 (21)
Resistant to $\geq 3$ classes	56 (55)	4,013 (12)
Resistant to $\geq 5$ classes	47 (46)	2,374 (7)
Resistant to $\geq 7$ classes	32 (31)	601 (2)
Resistant to at least ACSSuT†	42 (41)	2,156 (6)
Resistant to at least ACSSuTAuCx‡	29 (28)	581 (2)
Resistant to ceftriaxone	32 (31)	947 (3)
Resistant to nalidixic acid	6 (6)	643 (2)
Resistant to nalidixic acid and ceftriaxone	4 (4)	39 (0.1)

\*Data from the National Antimicrobial Resistance Monitoring System.  $p < 0.01$  for all.

†Resistant to ampicillin, chloramphenicol, streptomycin, sulfamethoxazole/sulfisoxazole, and tetracycline.

‡Resistant to ACSSuT, amoxicillin–clavulanic acid, and ceftriaxone.

# Salmonella Dublin

- Why emphasize this aspect this year?
- Remind your clients – no school tours, no “open” days, no car tours, “breakfast on the farm”, “open houses” etc ....probably not a good idea.
- Risk is difficult to quantify but also hard to mitigate.