

Salmonella Enteritidis Investigation

Salmonella Enteritidis is a bacterium that causes gastrointestinal infection in humans. The main reservoir is poultry. Humans usually get infected by eating contaminated chicken meat or eggs.

BC's prolonged *Salmonella* Enteritidis (SE) outbreak continued in 2015. The first wave of the outbreak was in 2008-2011 and was linked to ungraded eggs¹. Control measures such as improved communication, poultry vaccination, separation of flocks and a ban of hatching egg sales at farm gates brought the incidence of SE in BC down in 2012 and 2013. In 2014, SE incidence rates increased again; 2015 rates were higher than 2014 with 683 cases of SE reported in BC.

Three phage types (PT) accounted for over two thirds of BC cases – PT13a (34%), PT13 (17%) and PT8 (15%). This represents a shift in phage type from 2014, when PT8 was the most common (30%), followed by PT13 (24%) and PT13a (20%). All health authorities experienced increases in PT13a incidence in 2015.

Northern Health Authority and Interior Health had the highest SE incidence rates in 2015; in 2014, SE incidence had been highest in Fraser Health Authority and Vancouver Coastal Health (Figure 1.1). The reasons for this shift in geography are unknown.

Investigations have led to the source of this outbreak being identified as poultry products. Chicken meat (78%) and eggs (73%) are the most commonly reported exposures among cases with these phage types. Retail testing of chicken meat in BC demonstrated that a substantially higher proportion of SE was isolated from retail chicken breasts in 2015 compared to previous years. PT8, PT13 and PT13a were all detected in retail chicken meat.

Two clusters of cases were detected and investigated within the larger outbreak in 2015. In the spring of 2015, a cluster of SE PT13a was associated with the handling of live chicks from a single Alberta hatchery. There were 19 cases in BC and a total of 61 cases nationally. The investigation led to actions to mitigate the source of infection at the hatchery, public notification, education of clients who received chicks from the hatchery and client flock testing. Another cluster of SE associated with a restaurant in Interior Health had three lab-confirmed and three clinical cases. Confirmed cases were PT 8 and PT13a. A menu item was identified as a suspected source; however, it was not confirmed by laboratory testing.

Public health actions taken in 2015 to address the increased rates of SE in BC included ongoing meetings of the SE multi-disciplinary provincial outbreak team, communication with poultry industry boards and government, education of food service establishments, planning for the use of whole genome sequencing and enhancing exposure information routinely collected from *Salmonella* cases. A provincial SE Working Group (SEWG) was formed in 2015, co-chaired by the Ministries of Agriculture and Health and with representation from the BCCDC and the Health Authorities. The purpose of the SEWG is to define the problem of food related SE in the province and develop a feasible food safety strategy to address the problem.

1. Taylor M, Leslie M, Ritson M, Stone J, Cox W, Hoang L, Galanis E, Outbreak Investigation Team. Investigation of the Concurrent Emergence of *Salmonella* Enteritidis in Humans and Poultry in British Columbia, Canada, 2008–2010. *Zoonoses and Public Health* 2012;59(8):584-592. <http://onlinelibrary.wiley.com/doi/10.1111/j.1863-2378.2012.01500.x/full>.

1.1 *Salmonella* Enteritidis incidence by Health Authority and Year, 2006-2015

