

**ANIMAL AND HUMAN HEALTH PREVENTION OPPORTUNITIES**

***Salmonella in Live Poultry Flocks***

Backyard flocks are becoming increasingly popular and many Montanans enjoy raising their own chickens. However, some risks are associated with raising chickens, including live poultry-associated salmonellosis. Since 2013, in the United States, 2,650 illnesses, 614 hospitalizations, and 3 deaths have been caused by *Salmonella* outbreaks linked to live poultry. Forty-two of these cases were Montana residents (**table 1**). On June 5, 2017 the Department of Public Health and Human Services (DPHHS) confirmed that Montana was part of a multi-state outbreak of *Salmonella* linked to backyard flocks. Because *Salmonella* infections linked to domestic fowl are increasing in recent years, poultry exposure is becoming a greater public health concern. In this issue of *Montana One Health*, we discuss the health risks associated with raising chickens, the 2017 multi-state outbreak of *Salmonella* linked to small flocks, and preventive measures to aid in controlling the spread of *Salmonella*.

***Animal Health***

*Salmonella* bacteria have been isolated from many species, including poultry, swine, horses, cattle, other mammals, reptiles and amphibians. Some of these animals can be asymptomatic carriers and continuously or intermittently shed the organism. The majority of *Salmonella* infections in poultry result in no clinical signs and hatchlings might appear deceptively healthy, even if they are shedding *Salmonella* bacteria. If clinical signs are present in young birds, they can include, lethargy, anorexia, diarrhea, dehydration, and central nervous system abnormalities. *Salmonella* infection can be diagnosed by isolating the organism from fecal samples or blood in systemic infections. Antibiotics are not recommended to “treat” *Salmonella* in birds. Poultry does not often become sick because of *Salmonella* bacteria and the bacteria become part of their intestinal flora. Also, antibiotic use (when not medically necessary) can lead to antibiotic resistance.

Chickens become infected through fecal-oral transmission from contaminated food, live birds, and environmental surfaces or through vertical transmission, which occurs when an infected hen passes the bacteria to her eggs before laying. Shedding of the bacteria can be amplified during periods of increased stress. Baby poultry that are shipped through the mail from hatcheries to retailers or owners within the first few days of their lives may be significantly stressed which can increase bacterial shedding. Furthermore, hatcheries might place multiple species (chicks, ducklings, goslings, and turkey poults) in the same box, which provides an environment conducive for cross-contamination. In 2015, 766,188 live poultry were imported into Montana, including feed stores where many small flock owners purchased their birds.

**Table 1: Outbreaks linked to live poultry in U.S. Montana was not part of other multi-state live poultry outbreaks prior to 2013. \*2017 national data is preliminary.**

	<b>MT Count</b>	<b>U.S. Count</b>	<b>Hospitalizations</b>	<b>Deaths</b>
2017	16*	372*	71*	0*
2016	15	895	209	3
2015	4	252	63	0
2014	3	363	120	0
2013	4	514	91	0

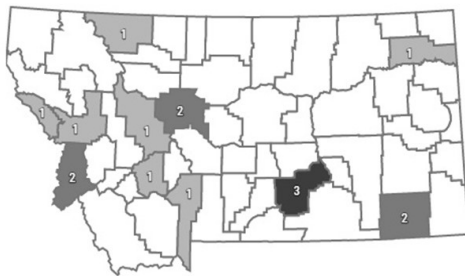
***Human Health***

Although people are generally infected with *Salmonella* through contaminated food, recent outbreaks have demonstrated that direct or indirect contact with birds and other animals can also lead to salmonellosis. In Montana, 11% of all *Salmonella* infections reported contact with chickens, ducks, geese, or turkeys prior illness onset.

The incubation period for *Salmonella* infection in humans is usually 12–48 hours. Signs and symptoms of salmonellosis often include fever, nausea, vomiting, and diarrhea, which can be bloody. Illness usually lasts one to four days, and most people recover without treatment other than oral fluids. Occasionally a more severe illness occurs and patients must be hospitalized. The estimated medical cost alone for a hospitalized case of salmonellosis is \$14,337. A small number of people with salmonellosis develop joint pain, called reactive arthritis. Children aged less than five, the elderly, and those with compromised immune systems are at higher risk for morbidity and mortality.

On June 1, 2017 the Centers for Disease Control and Prevention (CDC) announced eight outbreaks of human *Salmonella* infections linked to live poultry in backyard flocks. As of May 25, 2017 372 people in 47 states were infected with the outbreak strains of *Salmonella*. Seventy-one people have been hospitalized and no deaths have been reported. As of June 23, 2017 Montana has had 16 cases (**figure 1**) of salmonellosis linked to the nationwide outbreak (**table 2**). Thirty-one percent of them are children under four years old and five (mostly elderly) required hospitalization. The Montanans affected fell ill between March 26, 2017 and May 21, 2017. While case reporting has slowed, it has not stopped.

**Figure 1: Montana salmonellosis outbreaks cases linked to live poultry 2017 as of 6/23/2017**



**Table 2: live poultry exposures ill persons reported in salmonellosis cases linked to the 2017 nationwide outbreak (not mutually exclusive).**

Exposure	Percent people reported
Touching poultry	73%
Touching cages/enclosures	65%
Feeding poultry	59%
Cleaning cages/enclosures	41%
Handling eggs	28%
Snuggling poultry	17%
Kissing poultry	8%

References available on web version. Visit <http://www.dphhs.mt.gov/publichealth/publications.shtml>.

2,836 copies of this public document were published at an estimated cost of \$0.59 per copy, for a total cost of \$1660.54, which includes \$711.04 for printing and \$949.50 for distribution.






1400 Broadway  
Helena, MT 59620-2951

Sheila Hogan, Director, DPHHS  
Mike Honeycutt, Executive Officer, DOL  
Todd Harwell, MPH, Administrator, PHSD  
Martin Zaluski, DVM, State Veterinarian

The increasing popularity of small flocks is likely contributing to the increase in chicken associated *Salmonella* outbreaks over recent years. Considering this increasing popularity, clinicians should ask their patients about potential exposure to live poultry. Persons exposed to chickens and other domestic fowl should be counseled about measures to reduce their risk for *Salmonella* infection (figure 2).

Salmonellosis is a human reportable communicable disease (ARM 37.114.203). All suspected or confirmed cases must be reported immediately to your local public health jurisdiction. If your local public health jurisdiction is unavailable call 406-444-0273.

**Figure 2: Recommendations for reducing risk of human *Salmonella* infections associated with poultry**

-  Wash hands with soap and water after handling poultry
-  Don't let poultry in the house, keep poultry equipment outside
-  Don't let children < 5 years of age, older adults, or people with weak immune systems handle poultry
-  Don't kiss or snuggle with poultry
-  Cook eggs thoroughly