Salmonella can cause diarrhea in dairy cows and calves. In calves it most often affects animals under 30 days of age, except for Salmonella Dublin, which can cause diarrhea, fever, respiratory signs and generalized infection in calves up to 6 months of age. In dairy cows, diarrhea due to Salmonella most often occurs in the first 7 days after freshening. Fevers may be present and sometimes blood is seen in the feces. The most common types of Salmonella causing postpartum diarrhea are group B (usually S. Typhimurium) and group C2 (usually S. Newport). Other types may be seen, but they seem to cause milder infections or the cow may just be a transient carrier or a long term carrier of S. Dublin without disease.

Why does Salmonella affect recently fresh cows? Like all infectious agents, there is a balance between the host (cow), the organism (Salmonella) and the environment. When the balance shifts, the organism can take advantage and cause disease. The host factors in fresh cows include a normal depression of the immune system that occurs at freshening. The immune system is impacted by hormone and physiologic changes and stresses from new social interactions and housing/environment changes. Changes in feed, and how well the transition rations are working, plays a role as feed changes can cause the normal protective bacteria in the intestine to shift, creating an opening for Salmonella to become established.

The environment is often looked at in order to find out where the Salmonella is and how it is spreading. Water troughs have been the most common place the California Animal Health and Food Safety Laboratory has isolated Salmonella. Close up, maternity and hospital pen troughs have all been implicated. Contaminated equipment or boots brought into a maternity pen (such as a calf cart or a worker who has just been in the hospital pen) can be a source. Fresh cows that are housed in a hospital pen with sick cows can also be exposed to high numbers of the organism. Since a cow with diarrhea from Salmonella sheds billions of organisms into the environment, flush alleys and recycled lagoon water could have high levels of organisms - so cows drinking that water become infected. The reason cows later in lactation rarely show diarrhea, even if Salmonella is circulating in the flush alleys, is because they are not experiencing the same immune system challenges, feed changes and other stresses as a fresh cow. One study found a source of an uncommon type of Salmonella to be fat sold from one feed company to multiple mills. Another found low levels of Salmonella on a crop that was sprinkler irrigated with lagoon water. Salmonella has sometimes been isolated from feed on dairies, but consideration must be given to how the sample was taken. Was the feed leftover on the bunk or apron, or collected from the ground level of piles where cow manure, contaminated water or rodent droppings may be present? Perhaps the feed wagon became contaminated from feed on the ground.

Preventing diarrhea due to Salmonella in dairy cows requires focusing on environmental factors, feed and water trough management, sources of potential spread and fresh cow management to reduce factors that predispose fresh cows to developing diarrhea.