Salmonella
Infection costs Irish Dairy Farmers €112 per cow, per year.

Can you afford not to vaccinate with Bovivac S?
Herds vaccinated for Salmonella recorded superior profits to unvaccinated positive herds to a value of €11,800 based on 100 cow herd.

Incidence of Salmonella infection in Irish herds:

- The majority of Salmonella infections in Irish cattle are caused by one of the following serotypes: Salmonella typhimurium or Salmonella dublin.
- In a study, over a ten year period in Cork Regional Veterinary Laboratory (RVL), S. typhimurium accounted for 11% of Salmonella isolates and S. dublin accounted for 85% of isolates.
- Exposure of Irish dairy herds to Salmonella is common, with 49% of bulk milk tanks testing positive for Salmonella antibodies.
- Abortion in the absence of any other visible sign is associated with S. dublin which can result in significant losses in a herd.
- Figure 1 shows the monthly relative frequency of Salmonella dublin isolates from foetal bacterial cultures in both AFBI and DAFM laboratories (line graph), compared to the monthly relative frequency of foetal submissions (bar graph) during 2013. Salmonella dublin isolates peak in October-November, while the higher frequency of foetal submission occurs in January-February.

Salmonellosis in cows...so how does it enter a herd?

Salmonella infection enters a herd through:

- Replacement stock - Recovered cases after an outbreak can often act as carriers of the bacteria for a very long time. These animals can appear healthy but shed bacteria in times of stress, infecting other animals that they are in contact with. This is the most common source of infection for S. dublin.
- Physical contact-based spread - Salmonella can be brought into a herd via farm visitors, birds, rodents, pigs, chickens and vehicles.
- Animal to animal spread - Nose to nose contact between animals on neighbouring farms.
- Slurry - S. dublin is known to persist in slurry for up to one month and can survive in soil for up to one year. Grazing animals are susceptible to infection when grazing pastures which was previously treated with contaminated slurry.
- Feedstuffs / water - Water courses infected by neighbouring stock can act as a source of infection. Feedstuffs can act as a source of Salmonella infection in the event of infected rodents / wild birds contaminating the feed.

Abortion is the most common clinical sign associated with S. dublin. In 2013, 5.8% of bovine abortion submissions to AFBI and DAFM laboratories were attributable to S. dublin. A clearly defined peak in Salmonella abortions was evident in October and November. S. dublin related scour or septicaemia, account for a further 20 to 60 confirmed Salmonella outbreaks per year in the Munster area alone.
**Zoonotic Disease**

*Salmonella* infection not only causes disease in animals; it is also a major threat to human health. *S. typhimurium* affects a wide range of host species and is the second most common type of *Salmonella* to cause disease in humans. *S. dublin* in contrast is a rare cause of zoonotic disease. However, when people do contract *S. dublin*, the fatality rate is high.

**Diagnosis**

- Isolation of *Salmonella* from infected material: culture of the bacteria either from an aborted foetus or from the faeces of a diarrhoeic animal.
- Blood sampling: blood samples from suspect animals in the herd may be submitted for serology. Paired serology demonstrating a rise in titre can be very useful for diagnosing *Salmonella*.
- Bulk milk tank analysis for *Salmonella* antibodies can provide information on the disease status of the herd particularly if tested regularly.
- Bulk milk analysis for *Salmonella* antigen by PCR analysis is also possible to aid in the detection of shedding.

**Prevention**

*‘Salmonella dublin is one of the easiest diseases to introduce into a herd and one of the most difficult to eradicate once it is present.’*

- Control vermin and prevent access of wildlife to feed and bedding
- Maintain a closed herd or purchase only from herds of known disease status
- Quarantine recently introduced stock, including animals returning from a mart or show
- Consider vaccination with Bovivac S in at-risk herds

Herd with no history of *Salmonella* infection may be at risk of serious losses due to low levels of herd immunity if their biosecurity fails.

**Infected Herds:**

- Segregate and treat clinical cases in a dedicated isolation facility on farm
- Avoid spreading contaminated slurry on grazing land
- Strict personal hygiene and never consume unpasteurised milk to protect human health
- Vaccination with Bovivac S and boost annually ahead of the risk period
- Vaccination boosters should not be allowed to lapse in chronically infected herds due to the likely presence of subclinical carrier cows in these herds.

**Know the disease status of the herd**

**Susceptible**

- Contact between farm visitors, vehicles and livestock should be kept to a minimum
- Provide disinfection points and clothing at entry points to the farm
- Maintain stock and disease-proof boundary fencing
- Use piped mains water instead of natural water sources

**Infected**
A study conducted in the Teagasc, Animal and Grassland, Research and Innovation Centre, found that Salmonella carriers in a herd of 100 dairy cows can cost over €11,000 making it very important to control with vaccination. The presence of Salmonella on Irish dairy farms was found to reduce overall farm profitability on an annual basis. Vaccination for Salmonella was found to be economically justified and a recommendation was made to implement vaccination on all Irish dairy farms to protect human and animal health.

Data analysed from the Cork RVL, over a ten year period of risk, approximately one month prior to drying off. However, the vaccine is not licenced and field data suggest that vaccination with Bovivac S has no adverse effect on pregnancy and calving. No information is available on the effect of concurrent use of this vaccine with any other. It is therefore suggested that no other vaccine should be administered within 14 days before or after vaccination with the product.

Occasional hypersensitivity reactions may occur.

Withdrawal Period: Zero days

PHARMACEUTICAL PRECAUTIONS

Store at +2°C to +8°C. Protect from freezing. Use before the expiry date printed on the pack.

Package Quantities: 50ml polyethylene multidose bottles.

Further Information: The efficacy of Bovivac S has been established in the field using the recommended programme of use.

Specific experimental data has not been generated to quantify the duration of immunity, the effectiveness of a single booster dose vaccination or the degree of protection from colostral antibodies.

Legal Category: ROI POM(E) NI POM-V.

REFERENCES:

2 O’Leary 2014, Salmonella dublin in Irish cattle, Veterinary Ireland Journal 4 (12), 642-643
6 Anon (2014) DAFM/AFBI All island Animal Disease Surveillance Report 2013. Figures are based on profit reduction in non vaccinated dairy herds testing positive for exposure to Salmonella at a milk price of €0.34/L.
Bovivac® S
The only vaccine for Bovine Salmonellosis
(caused by *S. dublin* and *S. typhimurium*)

See [www.bovilis.ie](http://www.bovilis.ie) for more information

Use medicines responsibly
Further information is available from your veterinary supplier, the product SPC, or MSD Animal Health, Red Oak North, South County Business Park, Leopardstown, Dublin 18, Ireland.
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