



Salmonella Kills

Bovivac® S

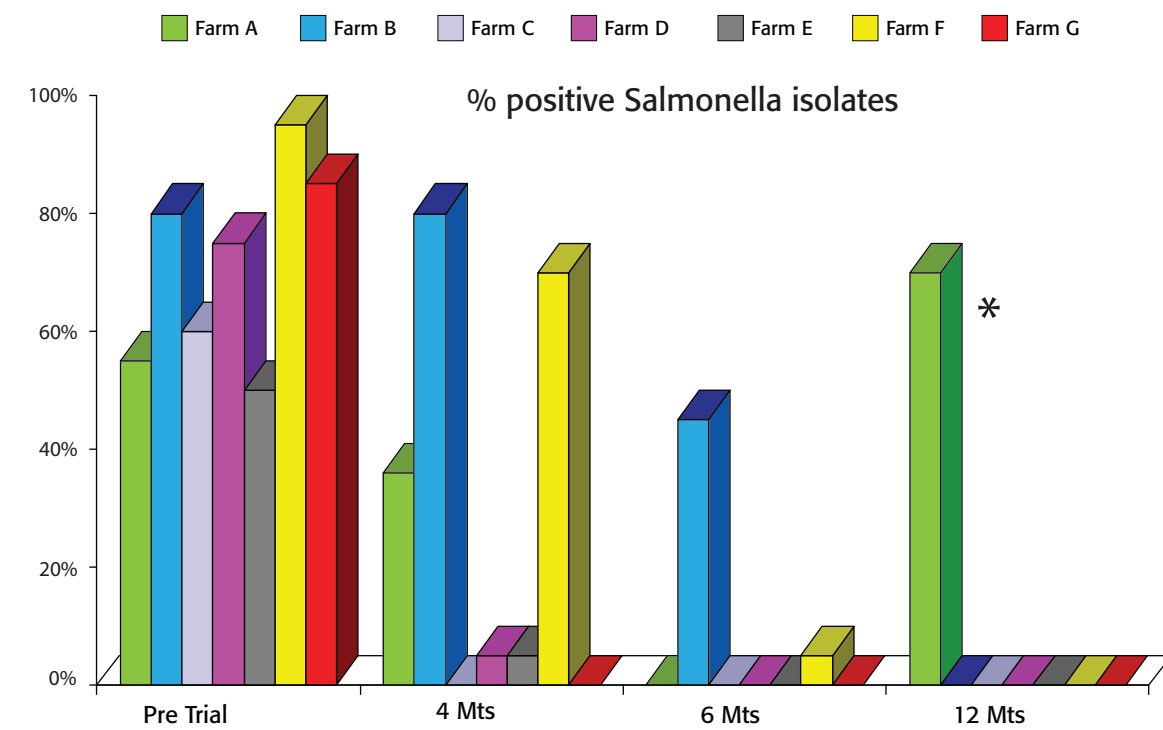
Repeat to Defeat

IS THERE ANY RECENT TRIAL WORK WITH BOVIVAC S?

A) REDUCTION OF SHEDDING

A trial was conducted on eight farms in the UK and the results are demonstrated in the graph below. The percentage of Salmonella positive cultures isolated from different locations on these farms (collecting yards, cubical houses etc.) decline over the months after vaccination. This demonstrates that the main mechanism of action of Bovivac S in controlling disease is via a reduction in environmental contamination.

Environmental Salmonella



* On this farm, vaccination had successfully eliminated positive culture results at the six month time-point. Bought-in unvaccinated animals were introduced to this herd and were thought to be the new source of salmonella positive cultures in this case.

B) REDUCTION OF ABORTION

A study has been carried out on submissions to the Cork RVL (WBC 2008 J. Crilly) over a 10 year period. The findings of this study were that Bovivac S reduced abortion incidence significantly. The recommendations were that the vaccine is best given ahead of the period of risk, which is approximately one month prior to drying off. However the vaccine is not licensed for controlling salmonella-induced abortions.

SUMMARY OF DATASHEET – BOVIVAC S

PRESENTATION

An opaque fluid vaccine containing inactivated cells of *S. dublin* (1×10^9 cells/ml) and *S. typhimurium* (1×10^9 cells/ml). The vaccine contains aluminium hydroxide as an adjuvant and thiomersal as a preservative.

USES

For the active immunisation of cattle in order to induce serological and colostral antibody protection against *S. dublin* and *S. typhimurium* infections and, in the face of an outbreak, to reduce *S. typhimurium* infections when used under field conditions as part of an overall herd management programme. Bovivac S may also contribute to reducing *S. typhimurium* contamination of the environment.

DOSAGE AND ADMINISTRATION

Dose: Adult cattle, 5ml – calves up to 6 months of age, 2ml. Administration is by subcutaneous injection, preferably in the loose skin on the side of the neck, observing aseptic precautions.

Primary Vaccination Schedule: Where diagnosis of salmonellosis caused by *S. dublin* and/or *S. typhimurium* has been confirmed, all at-risk adult cattle, including lactating cows, dry cows, heifers, barren cows and in-contact bulls (but excluding any with overt clinical signs of salmonellosis), should receive two 5ml injections separated by an interval of 21 days.

For pregnant cows, this primary vaccination course can be given irrespective of the reproductive status. Any pregnant cows that have not calved within 8 weeks of the second dose of vaccine should receive a further 5ml dose of Bovivac S 3-4 weeks pre-calving.

Healthy calves from approximately 3 weeks of age may also be given a primary vaccination course. Calves should be given two 2ml injections separated by an interval of 14 to 21 days.

Booster vaccination: All cattle vaccinated with the primary vaccination course of Bovivac S should receive a 5ml booster injection at least two weeks prior to each period of risk or at intervals of not more than 12 months thereafter. As part of an overall herd management programme, for pregnant cattle, it is advised that for each subsequent pregnancy, in order to maintain a sufficient level of active immunisation to reduce *S. dublin* and *S. typhimurium* infections under field conditions, a single booster dose of 5ml should be administered approximately 3-4 weeks before calving.

CONTRA-INDICATIONS, WARNINGS, ETC.

A small number of individuals may fail to respond to vaccination as a result of immunological incompetence or for some other reason. In the face of an outbreak of disease, it is therefore important to avoid vaccination of animals which have overt clinical salmonellosis

or intercurrent disease or which have a poor nutritional status. Such animals must be isolated and treated as appropriate and then vaccinated upon recovery.

Significant levels of immunity cannot be expected until two weeks after the second dose of the primary vaccination course.

All stock showing overt clinical signs of salmonellosis at the time of the initial vaccination programme should receive appropriate treatment and be fully vaccinated once they have recovered. Any unvaccinated stock must be managed separately to vaccinated stock, with no contact between the groups. Hygiene precautions must be instituted, where possible, to prevent transfer of infection from one group to another. When vaccinating animals, stress should be avoided, particularly during pregnancy. The effect of Bovivac S administered around service /insemination has not been studied. Limited laboratory 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.

Once opened, use of the vaccine must be completed within 10 hours. Partially-used containers must be discarded at the end of each day's operations. Partly used and empty packs, syringes and needles must be disposed of in accordance with national requirements.

Keep out of reach of children. For animal treatment only.

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: RO NI



Further information is available from MSD Animal Health, Red Oak North, South County Business Park, Leopardstown, Dublin 18, Ireland. Tel: +353(0)1 2970220. E-mail: vet-support.ie@merck.com Web: www.msd-animal-health.ie

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The only vaccine for Bovine Salmonellosis
(caused by *S. dublin* and *S. typhimurium*)

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Some e outcomes you’d expect from salmonella infection in a herd are:

- Abortions
- Dead calves
- Dead cows
- Scour outbreaks

But were you aware that salmonella...

- Is the most common cause of infectious bovine abortion in Ireland?
- Causes clinical disease on 14% of Irish farms every year?
- Is thought to be much more common in healthy carrier animals than clinically affected animals, especially on endemically infected farms?
- Was recently found in 7.6% of carcasses in an Irish abattoir?
- Is shed in faeces and in milk from infected animals and that 83% of Irish dairy farm families regularly consume unpasteurised milk?

SALMONELLOSIS IN COWS

SO HOW DOES IT ENTER A HERD?

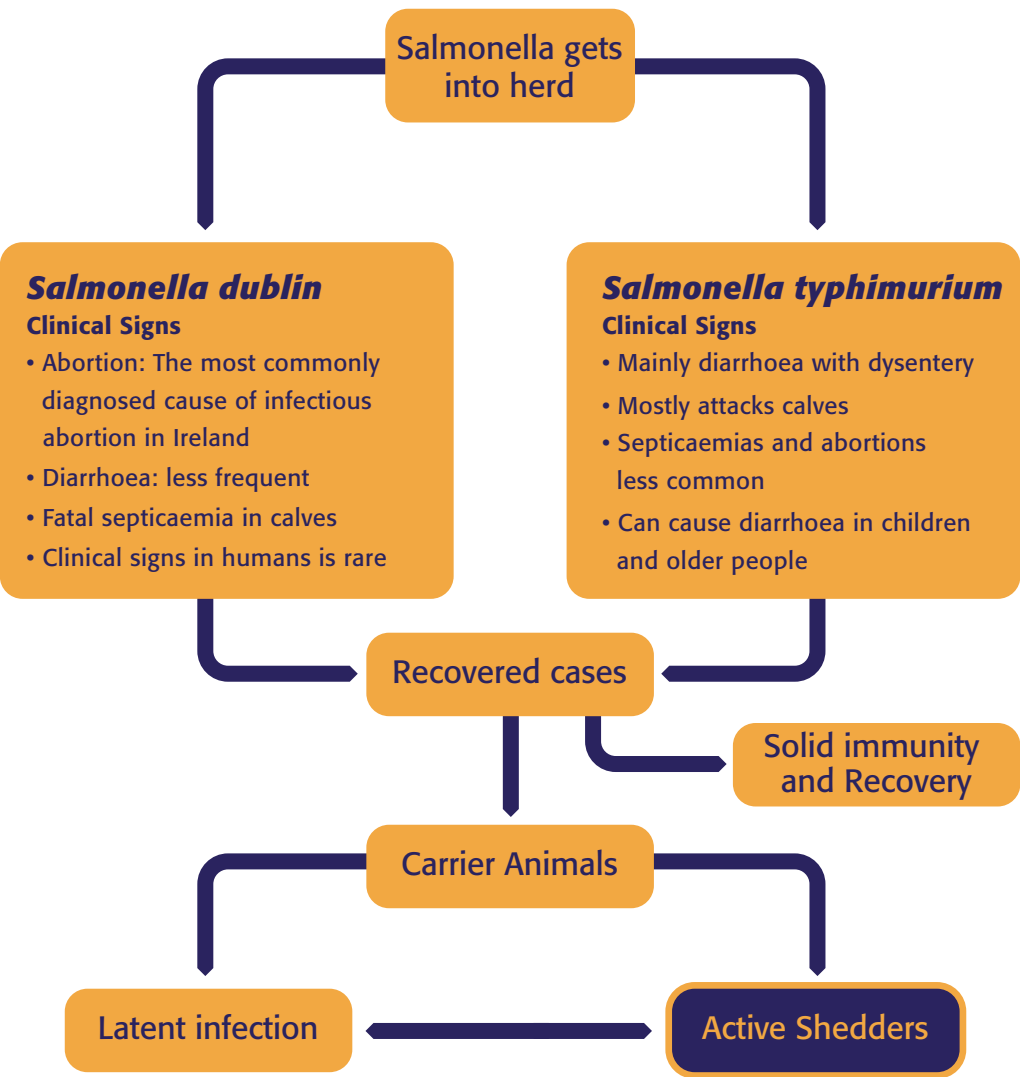
Salmonella enters a herd through:

- **Replacement stock** – Recovered cases after an outbreak can often act as carriers of the bacteria for a very long time. Bacteria are harboured in the gall bladder and lymph nodes. These clinically normal animals 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 and chickens. *S. dublin* outbreaks often occur on an area basis. As cattle rarely move between all farms in a locality, it is thought that the movement of personnel and vehicles is probably the most common source.
- **Animal to animal spread** – from neighbouring herds.
- **Slurry** – *S. dublin* is known to persist in slurry for one month and can survive in soil for nearly one year, allowing infection of animals grazing pasture previously treated with slurry.
- **Feedstuffs / water** – Water courses infected by neighbouring stock can act as a source of a number of infectious agents, including salmonella. Feedstuffs can act as a source of *S. typhimurium* in the event of infected rodents / wild birds contaminating the feed.

WHICH TYPE OF SALMONELLA IS THE MOST COMMON?

In a long term study carried out over a 10 year period, involving submissions to Cork Regional Veterinary Laboratory, it was found that 85% of salmonella submissions were *S. dublin* while 11% involved *S. typhimurium*. The most common clinical presentation of *S. dublin* infection is now abortion, while scour still remains the main presentation of *S. typhimurium*.

WHAT HAPPENS WHEN SALMONELLA GETS INTO A HERD?



Infected animals that recover are considered to be immune for a number of years. However, some of these will become “carriers”. This means that, though they are healthy, these carriers shed bacteria in faeces intermittently, possibly throughout their lifetime.

HOW IS SALMONELLA BEST DIAGNOSED?

Diagnosis involves submission of relevant material to the local Regional Veterinary Laboratory (RVL). Material should include aborted fetuses, diarrhoea samples, blood samples etc.:

- A:** Isolation from infected material: It is relatively easy to pick up salmonellae from stomach contents of a foetus or from diarrhoeic faeces. However, absence of bacteria does not completely rule it out. Septicaemia and pneumonia caused by this bacterium are somewhat more difficult to diagnose by culture.
- B:** Blood sampling for serology: A random cut off for positives has been assigned as >1/80 on the serological test. However, this can be somewhat confusing in a herd that was previously vaccinated. A rising titre (one sample taken at time of disease with another taken 2 weeks later) can be useful for diagnosing salmonella as a cause of diarrhoea. However, blood sampling is of limited value in diagnosing abortion, as seroconversion has often happened at the time of initial bacteraemia rather than the 4-6 weeks later when the foetus is aborted.

WHAT ARE THE MOST IMPORTANT ASPECTS OF A SALMONELLA CONTROL PROGRAMME?

ADVICE FOR KEEPING IT OUT	ADVICE ON DAMAGE LIMITATION WHEN IT DOES GET IN
Prevent access of visitors and visiting vehicles to livestock	All of the advice regarding biosecurity in order to keep disease out (see across) also applies here as it facilitates more rapid control of disease and avoids outward contamination of other farms
Provide farm clothing for essential farm visitors, coupled with disinfection at entry	Maintain a dedicated isolation facility on the farm
Maintain a closed herd or purchase only from herds of known disease status	Segregate and treat clinical cases
If buying in, quarantine arrivals for a 4 week period	Slurry should not be spread on grazing land as salmonella can survive for up to a year in soil
During quarantine period, sero test animals twice at two weekly intervals and faecal test animals 3 times at the same intervals before introduction to the main herd	Strict personal hygiene should be maintained
Maintain double fencing (3m buffer zone) at farm boundaries	Older people and children should not have access to contaminated areas
Prevent vermin / wildlife access to feed / bedding	Unpasteurised milk should never be consumed
Use piped mains water rather than natural water sources	Vaccination with Bovivac S should be carried out in the face of an outbreak and boosted annually ahead of the period of risk
Animals which fail to sell at the mart or which are attending a show should be quarantined on return	Vaccination boosters should not be allowed to lapse as infected herds have a pattern of breaking down every 5-7 years as naïve animals are introduced
Diagnose abortions, scour cases or other illnesses with the aid of laboratory analysis as early as possible	
Consider vaccination with Bovivac S if the herd is at risk – large herd, buying-in, etc.	

VACCINATE WITH BOVIVAC S – THE MOST IMPORTANT PART OF A SALMONELLA CONTROL PROGRAMME