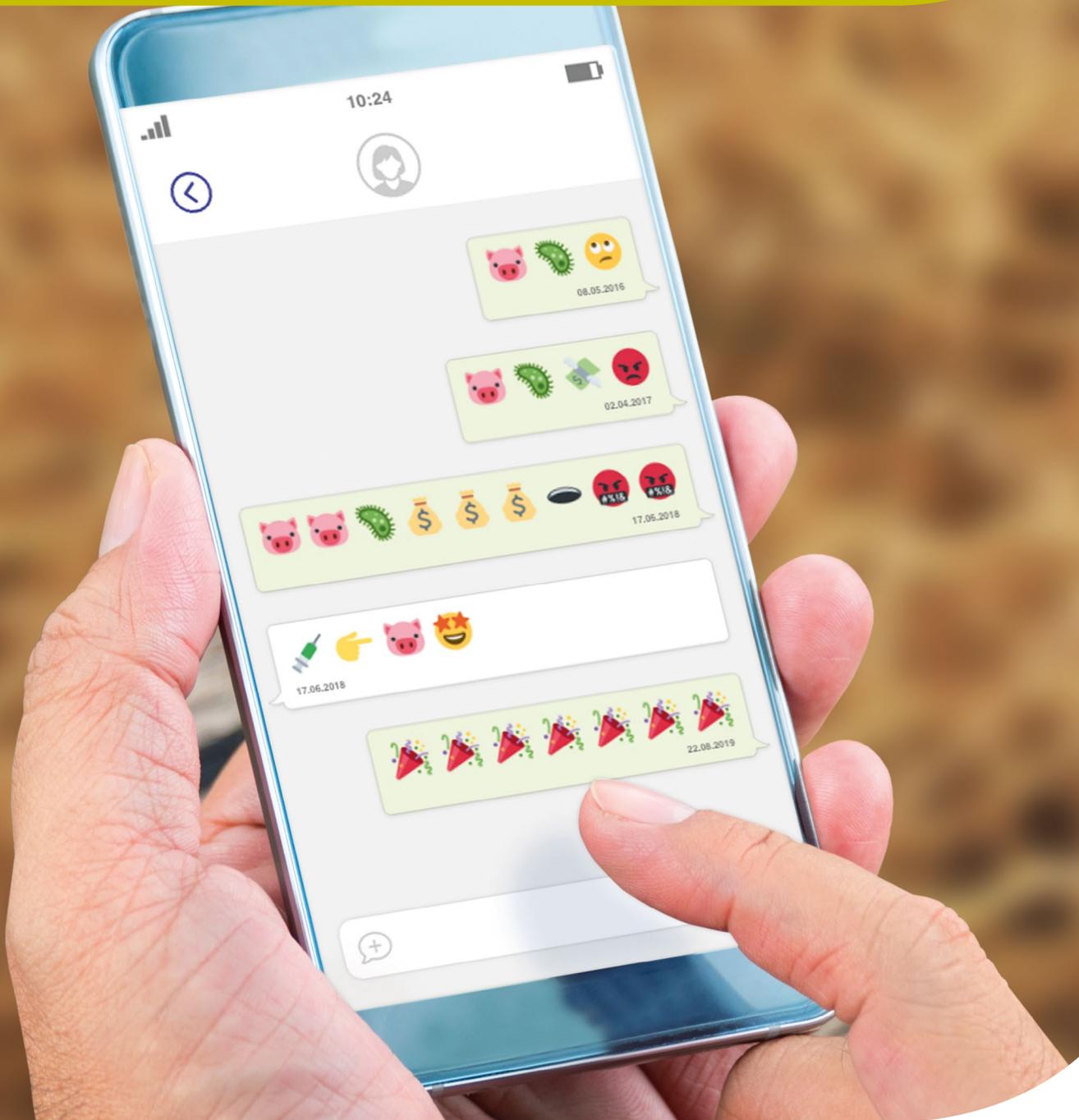


SALMOP^{RC}®

Vaccination for sows and piglets



**Solve your salmonella problem
once and for all.**

Together, beyond animal health



Salmonella: the ongoing problem



Salmonella is still the second most common zoonosis within the European Union.¹

91,662 salmonella infections in humans in 2017.¹

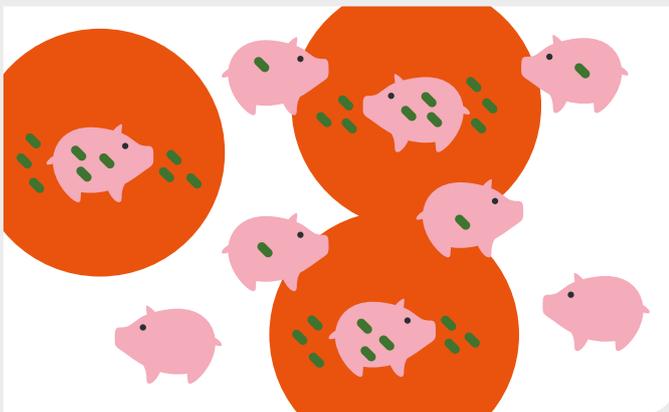
Slaughterhouses impose penalties on pigs contaminated with salmonella, as they are obliged to deliver salmonella-free meat to their customers.

Breeders find it difficult to sell salmonella infected gilts. Piglet producers don't accept increasingly less carrier gilts.

Pig farmers try to control the salmonella pressure with an increased use of acids, which is costly and not sustainable.

¹ EFSA Journal 2019; 17 (2): 5598, www.efsa.europa.eu/en/efsajournal/pub/5598

Initial situation: infected pig herd



- extent of shedding increases
- environment gets more and more contaminated
- hygiene measures are not sufficiently effective
- carry-over between different compartments
- temporary increased use of acids has no sustainable effect

Unvaccinated flock: the situation becomes worse



- high risk of slipping into the worst category in countries with a salmonella monitoring system
- clinical signs such as diarrhoea after weaning may occur
- temporary use of antibiotics may be necessary to combat clinical signs

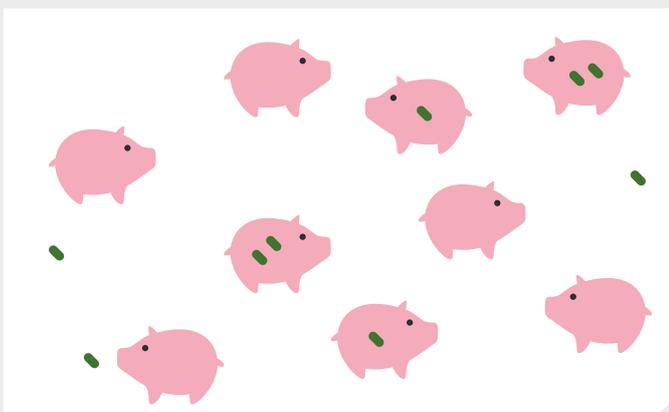
Vaccination: the most important part of the solution



Continuous vaccination in the individual herd and in the entire population is a key component for achieving permanent reduction of the *Salmonella* Typhimurium infection pressure:

- **Sow vaccination reduces** shedding of wild strains of *Salmonella* Typhimurium during lactation in sows and gilts and results in a lower risk of infection for the piglets.
- **Piglet vaccination reduces** colonisation and shedding of the pathogen in piglets for the prevention of animal-to-animal infection.
- **Shortly after starting the vaccination** the clinical signs disappear.
- **The permanent sow and gilt vaccination** ensures the measures' sustainability and the continuance of an excellent categorisation.
- **Vaccination is highly effective** when accompanied by appropriate hygiene and management measures.

Vaccinated flock: the situation is stabilised

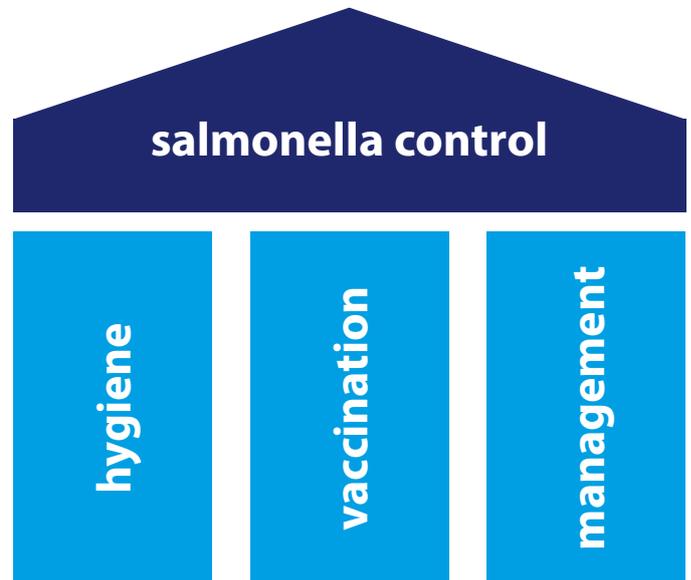


- continuous vaccination and accompanying measures reduce the prevalence of salmonella
- clinical signs disappear
- infectious pressure is highly reduced
- end of piglet vaccination
- maintaining sow and gilt vaccination

Combat infections with an integrated approach

Vaccination against salmonella is fully effective when embedded into comprehensive measures.

Optimisation of internal management and improvement of cleaning and disinfection protocols are imperative.



Your success plan in four easy steps



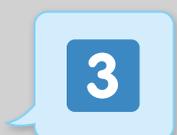
Define objective

Agree on individual objectives to solve the specific salmonella problem of the pig holding. Ceva's technical service supports you with experience and knowledge.



Determine status

Inspect the pig farm. Analyse and record weak points. Take samples. Use the tools which are provided by Ceva, e.g. the checklist and the sampling kit.



Define measures

Create an action plan including the vaccination schedule and further measures. The piglet vaccination is convenient with the drencher kit provided by Ceva.



Control progress

Check the effects of your measures regularly and optimize them if necessary. Ceva's technical service supports you in interpreting of the laboratory results.

Success: the sustainable effects of vaccination



Combined vaccination stops clinical signs²

- Best reduction of shedding of the challenge strain and infectious pressure,
- and fastest elimination of diarrhoea

when both sows and piglets were vaccinated.

2 Stief, M., Diss. Leipzig 2008

Longitudinal vaccination reduces antibody titre and detection rate³

- Significant reduction of the detection rate,
- no more antibiotic treatment against salmonella necessary,
- and highly reduced antibody titres

when sows and piglets were vaccinated over a period of 18 months.

3 T. Lindner et al., Die Immunprophylaxe – ein Beitrag zur Bekämpfung von Salmonella Typhimurium, Infektionen beim Schwein; Tierärztl. Praxis, 30 (G), 392 – 394, 2002

Vaccination improves daily weight gain⁴

- Significantly higher daily weight gain,
- less excretion of salmonella,
- and a lower specific mean antibody titre

when piglets were vaccinated under a salmonella monitoring program.

4 L. De Ridder et al., Usefulness of a live *Salmonella* Typhimurium vaccine to control Salmonella infections on farrow-to-finish pig herds; The Veterinary Journal, 2014

How to vaccinate



Each icon corresponds to a group of animals in a 3-week batch system.

Before vaccination

piglets infected by excretions from sows



+ 1 week

+ 4 weeks

high infection pressure; possibly clinical problems



+ 7 weeks

+ 10 weeks

+ 13 weeks

low salmonella detection rates



+ 16 weeks

+ 19 weeks

+ 22 weeks

+ 25 weeks

+ 28 weeks

4 weeks after vaccination

piglets protected by vaccination



vacc. group 2

vacc. group 1

unvaccinated piglets with high infection pressure in the environment



8 weeks after vaccination

piglets are protected, but still exposed to high infection pressure



vacc. group 3

vacc. group 2

vacc. group 1

unvaccinated piglets with high infection pressure in the environment



19 weeks after vaccination

nursery pigs are now in fattening; infection pressure depends on hygiene management



vacc. group 7

vacc. group 6

vacc. group 5

vacc. group 4

vacc. group 3

vacc. group 2

vacc. group 1

28 weeks after vaccination

depending on infection pressure in fattening, lower antibody titres can be expected from this point



vacc. group 10

vacc. group 9

vacc. group 8

vacc. group 7

vacc. group 6

vacc. group 5

vacc. group 4

vacc. group 3

vacc. group 2

vacc. group 1

After 28 weeks, all sows and progeny of the herd have been vaccinated.

A lasting reduction in infection pressure means low serum antibody levels.

Vaccination schedule

	Basic immunisation	Booster vaccination
Sows	Two subcutaneous injections with a 3-week interval (6 and 3 weeks before farrowing)	1 injection (3 weeks before farrowing)
Piglets	2 oral vaccinations with a 3-week interval (starting on day 3 after birth)	

Immunity develops within 2 weeks of completing the vaccination scheme.

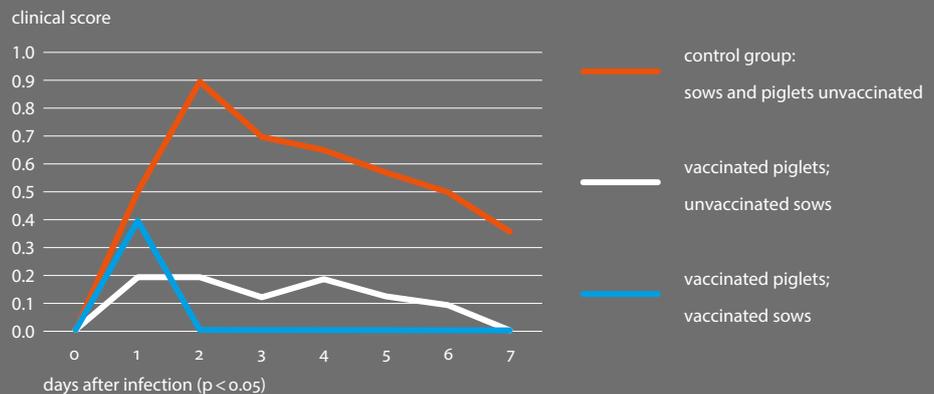
Duration of immunity:
In sows 24 weeks;
in fatteners 19 weeks.

Antimicrobial use should be discontinued for five days before and five days after vaccination. If such treatment is essential, the animals should be vaccinated five days later at the earliest.

Scientific evidence for the positive effects of vaccination

Combined vaccination stops clinical signs²

The three study groups consisted of salmonella-free sows and piglets. A *Salmonella* Typhimurium DT104 strain was used to infect the animals. The sows were vaccinated subcutaneously 6 and 3 weeks ante partum; the piglets were immunised orally on day 3 and at the age of 4 weeks. The animals were infected in week 7 using a stomach tube.

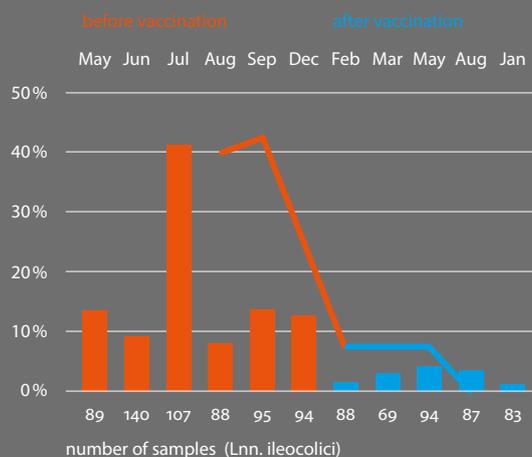


Longitudinal vaccination reduces antibody titre and detection rate³

Over a period of 1.5 years, 575 sows and their offspring (16,356 piglets) were vaccinated in a herd with clinical salmonellosis.

Vaccination schedule for sows and gilts: 3 and 6 weeks subcutaneous ante partum.

Vaccination schedule for piglets (differs from SPC): day 21 oral, week 7 IM.



Columns:

Cultural detection of *Salmonella* Typhimurium field strain in intestinal lymph nodes of slaughter pigs.

Curve:

Serological antibody detection. Proportion of positive samples after testing; 40 serum samples in each case.

Vaccination improves daily weight gain⁴

Daily weight gain between 3 days and 29 weeks of age. Within each herd, 120 piglets were orally vaccinated at 3 and 24 days of age; 120 piglets were left unvaccinated as control group.

	vaccination group	control group	difference
herd A	593.0 g	563.4 g	29.6 g
herd B	504.3 g	467.1 g	37.2 g
herd C	535.6 g	496.7 g	38.9 g
combined	546.8 g	509.3 g	37.5 g

Solve your salmonella problem once and for all.



Innovation in
Salmonella Prevention.

www.stop-salmonella.com



- **Protects** against *Salmonella* Typhimurium plus monophasic serovars.
- **Strong tool** in your hands, reducing colonisation and shedding.
- **Sustainably prevents** clinical and subclinical disease, reducing the need for expensive antibiotics and acids.

Vaccination schedule

	Basic immunisation	Booster vaccination
Sows	Two subcutaneous injections with a 3-week interval (6 and 3 weeks before farrowing)	1 injection (3 weeks before farrowing)
Piglets	2 oral vaccinations with a 3-week interval (starting on day 3 after birth)	

Immunity develops within 2 weeks of completing the vaccination scheme.

Duration of immunity:
In sows **24 weeks;**
in fatteners **19 weeks.**

Antimicrobial use should be discontinued for five days before and five days after vaccination. If such treatment is essential, the animals should be vaccinated five days later at the earliest.

Salmoporc 20 doses Lyophilisate and solvent for suspension for injection for pigs. Composition: Each dose (1 ml of the reconstituted vaccine) contains: *Salmonella Typhimurium* mutant, strain 421/125, genetically-stable, double-attenuated (histidine-adenine auxotrophic): 5×10^8 to 5×10^9 CFU*.
Indications: Subcutaneous use: For active immunisation of sows and gilts to reduce excretion of *Salmonella Typhimurium* wild type strains during lactation. Onset of immunity: two weeks after the second vaccination. Duration of immunity: 24 weeks after the second vaccination. **Oral use:** For active immunisation of suckling and weaned piglets to reduce bacterial colonisation and excretion as well as clinical symptoms due to an infection with *Salmonella Typhimurium*. Onset of immunity: two weeks after the second vaccination. Duration of immunity: 19 weeks after the second vaccination. **Contraindications:** None. **Adverse reactions:** A temporary rise in body temperature by up to 1.1 °C on average, in single cases up to maximum 2.2 °C (up to two days after vaccination) occurs very commonly after vaccination of gilts and sows. A mild local reaction (redness and swelling with an average diameter of 4 cm and a maximum diameter of 11 cm) at the site of injection occurs very commonly in gilts and sows. These disappear without treatment within approximately two weeks. Mild diarrhea was commonly observed in suckling piglets after oral application. **Withdrawal period:** Meat and offal: 6 weeks post 2nd vaccination. **To be supplied only on veterinary prescription.** Marketing Authorisation Holder: IDT Biologika GmbH, Am Pharmapark, 06861 Dessau-Rosslau, Germany. * Colony Forming Units

Salmoporc 200 doses Lyophilisate for oral suspension for pigs. Composition: Each dose (1 ml of the reconstituted vaccine) contains: *Salmonella Typhimurium* mutant, strain 421/125, genetically-stable, double-attenuated (histidine-adenine auxotrophic): 5×10^8 to 5×10^9 CFU*. **Indications:** For active immunisation of suckling and weaned piglets to reduce bacterial colonisation and excretion as well as clinical symptoms due to an infection with *Salmonella Typhimurium*. Onset of immunity: two weeks after the second vaccination. Duration of immunity: 19 weeks after the second vaccination. **Contraindications:** None. **Adverse reactions:** Mild diarrhea was commonly observed in suckling piglets after oral application. **Withdrawal period:** Meat and offal: 6 weeks post 2nd vaccination. **To be supplied only on veterinary prescription.** Marketing Authorisation Holder: IDT Biologika GmbH, Am Pharmapark, 06861 Dessau-Rosslau, Germany. * Colony Forming Units

