

The use of MS-H vaccine on a turkey farm in The Netherlands

Friday July 8th, Brisbane

Rob Vriens, AVDEE dierenartsen



Varkens



Pluimvee



Herkauwers



Vleeskalveren



Gezelschapsdieren

- A few things about our practice
- The situation in The Netherlands regarding the changing, prudent, use of antibiotics
- Introduction of the farm(s) and the problems
- Why decided we to use the MS-H vaccine
- Methods
- Results
- Discussion









How it all started.....

- Started in 1964 by Leon Bollen, the founder of the practice, in a small town with lots of promising farmers, both pigs and poultry
- Gradually extended towards a practice for farm and companion animals with 12 veterinarians
- In 2010 we've decided to stop with companion animals (we sold this part)



How it all started.....

- A practice with our own autopsy room, laboratory for simple diagnostics and a pharmacy
- At the end of 2015 there were 12 veterinarians working in poultry or pigs and a little bit in cattle
- In 2014 we have celebrated our 50th anniversary



The present

- Starting January 1st 2016 a merger with DAC Aadal, Heeswijk-Dinther, we became:



- This results in a Veterinary Practice with 34 veterinarians, 16 owners
- Mainly pigs and all sorts of poultry (broilers, rearing layers, breeder both broiler and layer and turkey's)
- Also located in Germany and Belgium
- Working area: The Netherlands and a part of Germany and Belgium

Location of our Practice



The future

our topics today are:

- Animal welfare
- (prudent) use of antibiotics
- One Health concept
- Back to the old fashioned way?
 - Organic
 - Free range

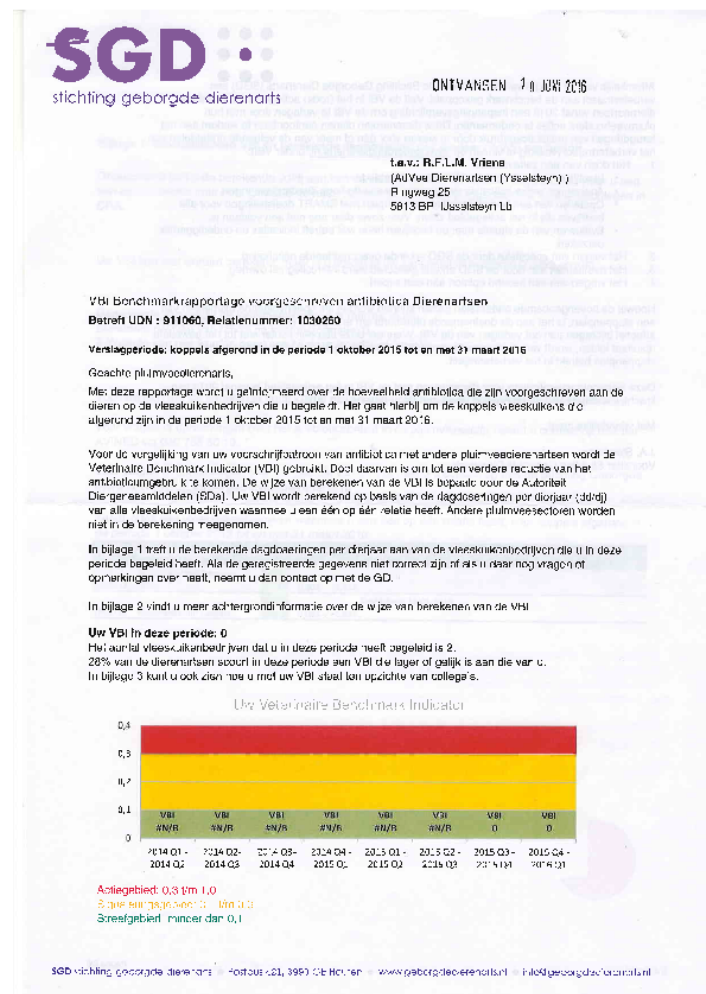


Antibiotics in The Netherlands

- 2009 is the reference year for the use of AB
- The goal is a reduction of 50% in 2015 and even 70% in 2017!!
- Not only the amount of antibiotics is monitored, also witch kind of antibiotic is used
 - Categorized in order for the ability to induce resistance, or the human aspect (use) of a specific antibiotic (e.g. Colistine)
- Farmers and veterinarians are controlled
- 3 levels for the amount of antibiotics they use, 3 categories:
 - **RED: BAD, TO MUCH**
 - **YELLOW: TRY TO IMPROVE**
 - **GREEN: OKE, BUT STAY ALERT**

The use of Antibiotics in The Netherlands

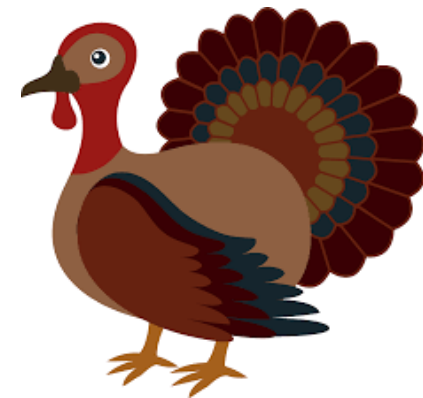
- Every 3 months the vet and the farmer receives a overview:
- If you are in the “red” section you must take steps to improve yourself (the same for the farmer)
- You must act according to rules and regulation: if not you must show and explain why you didn't do that!
- The changes are going very fast, both for vet's and farmers,
- Is it successful: YES, we've achieved a (almost) 60% overall reduction.



Why did we start with the use of MS-H vaccine on a turkey farm?

The situation and location of the farm

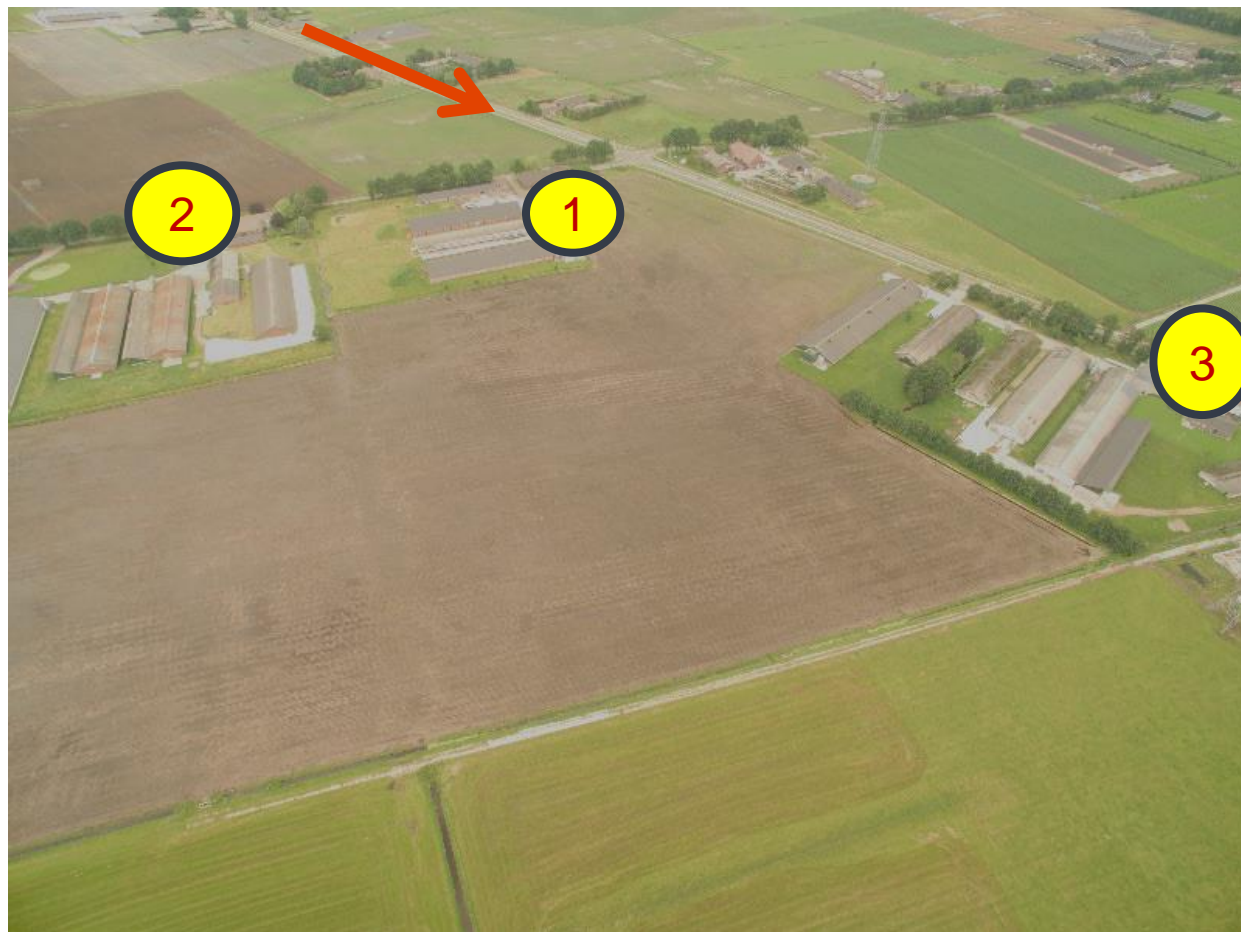
- Situated in a area with lots and all kinds of poultry very close together (sometimes less than 100 meters!)
- Also many pig farms nearby
- There is a road very near to the farm and a lot of poultry is transported (to the slaughter house) over this road
- The farm has 3 locations: 1 rearing farm and 2 fattening farms: the rearing farm is in between the other 2!!!!
- Other turkey farms are very near by
- It's challenging for the vet and the farmer!





Location of the farms

- 1= rearing farm P009
- 2= fattening farm P011
- 3= fattening farm P108



Fattening farm Paardekopweg 11



Fattening farm Paardekopweg 11



Fattening farm Puttenweg 108



Rearing farm Paardekopweg 9



Other reasons

The use of antibiotics related to turkeys:

- Among the highest in the country!
- Due to Clostridia, Mycoplasma and the constant threat of a possible Blackhead infection

The MS situation in The Netherlands:

- Layer breeders: almost 100% free
- Broiler breeders: mixed, many are positive
- Broilers: ??
- Commercial layers: around 70% are positive (multi age farms)
- Turkeys: several positive flocks
- Backyard flocks: most of them are positive (also MG and Coryza..)

The main reason

- Every 8 weeks 31.000 pullets in the rearing farm (24.000 males, 7.000 females)
- After 4-5 weeks transport to one of the fattening farms
- Around 6.000 males are transported to a farm nearby (other owner, farm 300 meters further away!
- Slaughter age females 16 weeks of age, they weigh around 11 kilo
- Slaughter age males 21 weeks of age, around 21-22 kilo, also depending on the brand of Turkeys (Hybrid XL/Converter or B.U.T. Big 6, TP 9)
- Stock density rearing: 9.2/m², after 3 ½ weeks 7.2/m² (until 6 weeks of age)
- Stock density fattening: starting at 3.2/m². After the females are slaughtered it's decreased to 2.4/m²






The main reason

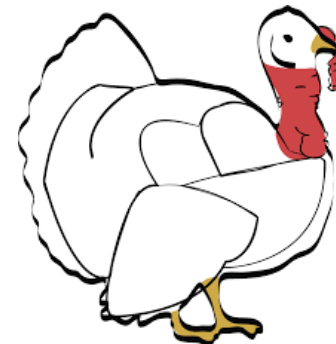
- So always at least 3 groups of animals on the 3 farms.
- “impossible” to do a good cleaning and disinfection and get a proper all in – all out because the other farms are very near by.
- Also depending on the surroundings with a lot of other birds (layers, broilers and turkey's)
- At the end of each flock blood samples are taken for ND/AI/MG and MS: several times the flock is tested positive for MS
- So impossible to get free of MS
- MS causing
 - higher antibiotic use (Doxycycline, Tylosine, Tilmycosine, Denegard)
 - Higher mortality and more selection
 - Higher condemnation, (blisters, arthritis)

Transport car for the pullets



The farmer's main reason to start vaccinating

- Mortality too high (12%)
- Use of antibiotics too high (average in NL at that time around 45 days, his farm level around 65)
- Condemnations with the toms too high (6 %)
- Just bought two farms from his brother  he needed better (financial) results. So he needed the square meters and the number of birds per m2
- The integration who are slaughtering his birds is demanding better quality
- Most of the flocks had, at slaughter age, a positive serology (ELISA)
- And/or a positive PCR MS



MS-H Vaccine

ONE DROP AWAY FROM SOLVING
YOUR PROBLEMS WITH MYCOPLASMA
SYNOVIAE!



**MS- H VACCINE EYEDROPS SUSPENSION SAFE, RELIABLE AND
LONGLIVED IMMUNITY AGAINST
MYCOPLASMA SYNOVIAE (MS)**



MS-H vaccine eyedrops suspension

- UNIQUE, TEMPERATURE SENSITIVE LIVE Mycoplasma synoviae VACCINE
- SINGLE DOSE, NO RESPIRATORY REACTIONS
- PROTECTS AGAINST BOTH AIR SACCUITIS AND EGG SHELL ABNORMALITIES
- LOW PROPENSITY TO SPREAD
- NO VERTICAL TRANSMISSION
- NO RISKS OF LOCAL REACTIONS AS WITH INACTIVATED VACCINES
- INCREASED EGG NUMBERS, REDUCED MORTALITY
- PROVEN TRACK RECORD, USED SINCE 1995 AND NOW AVAILABLE IN OVER 45 COUNTRIES
- REDUCED NEED FOR ANTIMICROBIAL THERAPY



Eyedrops suspension. One dose (50 µl) contains Mycoplasma synoviae Strain MS-H live attenuated thermosensitive, at least $10^{5.5}$ CCU* Chicks from 5 weeks of age (future layer breeder chickens, future broiler breeder chickens and future layer chickens). For active immunisation of future broiler breeder chickens, future layer breeder chickens and future layer chickens to reduce air sac lesions and reduce the number of eggs with abnormal shell formation caused by Mycoplasma synoviae. Onset of immunity: 4 weeks after vaccination. The duration of immunity to reduce air sac lesions has been demonstrated to be 60 weeks post vaccination. The duration of immunity to reduce the number of eggs with abnormal shell formation has not yet been demonstrated. * Co-our Changing Units

Distributed in XXXX by XXXX

Pharmure Ltd, Bewell House, Bewell St, Hereford, HF4 0BA, UK



MS-H Vaccine: methods

In The Netherlands MS-H Vaccine:

- ✓ Is registered for eye drop administration only
- ✓ Only for layers/breeders
- ✓ Before vaccination, the flock is always tested with PCR. Always negative.
- ✓ We used course spray, 800ml/1000 birds
- ✓ Birchmeier nozzle 1.3



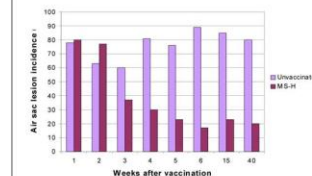
MS-H vaccine eyedrops suspension

Is a live, single dose vaccine with a long track record in providing secure protection against the adverse effects of MS in layers and breeders.

Novel Technology: MS-H is a temperature sensitive strain of MS and unlike traditional vaccines (which only undergo a transient period of replication in birds) MS-H multiplies and persists in the trachea, but cannot spread further within the bird because the temperature sensitive nature of MS-H means that it cannot survive or grow at the birds 'core' or deep body temperature. The resulting persistence in the trachea constantly stimulates the immune response against MS.

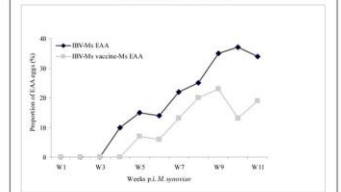
In laboratory trials using severe MS challenge models in combination with IB virus (an exacerbating agent to MS), MS-H significantly reduced the level of air sac lesions, the first stage of progression of MS that leads to drops in egg production, poor shell quality and secondary bacterial disease.

Relative incidence in level of air sac lesions in vaccinated and unvaccinated birds over a 40 week period



In similar trials using a severe challenge model, MS-H demonstrated a significant reduction in numbers of eggs affected by Egg Apical Abnormality (EAA) or 'Glass Topped Eggs' compared to non vaccinated birds when challenge with one of the European strains of MS associated with this syndrome.

Relative reduction of eggs affected by EAA in MS-H vaccinated and unvaccinated birds



Eyedrop administration is essential for secure vaccination

Some of the important features of an MS vaccine are; low risk of spread, no reversion to virulence and the ability to differentiate the vaccine from field strain. These features can all be found in MS-H. The high dose required to establish the vaccine in birds means that eyedrop administration is necessary and in addition, the shedding of vaccine strain is low. This also minimises the risk of vaccine spread to neighbouring flocks.

The attenuation process employed in developing MS-H involved the use of chemical mutagens rather than the traditional 'passaging' system. The result, no reversion to virulence was demonstrated with MS-H after 5 in vivo and 10 in vitro passages. In addition the temperature sensitive nature of the vaccine was also retained.

Strain identification with PCR techniques that are readily available allows differentiation of vaccine and field strains of MS allowing both diagnosis, screening prior to vaccination and validation of the administration process.

This means that MS-H is a vaccine that is safe and very unlikely to spread to unvaccinated flocks. The temperature sensitive nature of MS-H also will not allow colonisation of the internal body organs and as such vertical transmission is not possible.

Vaccination schedule

Day 1	TRT	coarse spray	1/1 dosage
Day 7	E. coli	coarse spray	1/1 dosage
Day 14	ND	coarse spray	1/1 dosage
Day 30	HE	drinking water	1/1 dosage
Day 40	MSH	coarse spray	1/1 dosage
Day 56	ND	drinking water	1/1 dosage



Results

Birth date	FCR	Medication cost (€/bird)	BW (kg)	Mortality (%)	Condemnation (%)	Daily gain (Gr/day)
28/07/14 ★	2,74	1,20	20,00	11,20	6,60	142
23/09/14 ★	2,75	1,15	19,23	11,00	5,00	138
18/11/14 ★	2,76	1,20	21,19	9,00	7,43	147
13/01/15 ★	2,66	1,30	20,52	11,56	6,31	140
10/03/15 ●	2,62	1,36	19,43	12,96	6,28	138
05/05/15	2,59	1,25	21,03	14,65	4,40	145
01/09/15	2,64	1,07	21,03	11,68	4,28	148
27/10/15	2,73	1,35	21,63	12,73	3,50	148
22/12/15	2,60	0,93	21,57	12,07	4,18	148

Schlachtergebnis

00/080 Geestland

19. Dezember 2014

Seite 1

fb

Schlachtdatum	17.12.14	Stand von	19.12.14 07:28
Master	05148 A. J. Jenniskens-van Soest	VVO-Registrier-Nr.	528 00 000 210 7963
Ort	Ysselsteyn	Geschlecht	Hahn
Partie	1	Masttage	141
Fußballenindex (Pkt.)	12,0	Karkassenverwurf	Nein
Nüchterung Kröpfe	Leer	Befüllung Container	gut
Nüchterung Mägen	Voll	Fehlsortierung in %	0,39
Brustblasen in %	9,0 66,0 25,0	Verwurf % vom Brutto	8,74
	keine ggr-mgr. hgr.	Anzahl Schlachtgew. kg Lebendgew. kg	

Angelieferte Stück	7196	143.600,00
Durchschnittsgewicht		19,96
Transport Tote Stück	25	498,89
Verworfen Tiere	540	7.020,00

Bezahlte Tiere 6631

Verworfen Teile nach Teilstück

Verworfen Teile gesamt

Flügel/Brust	2.793,03
Keule	2.111,15
Innereien - Leber	558,52
Innereien - Herzen	79,94
	43,42

Verworfen Tiere

Verworfen Tiere mit Masterbezug

Bauchwassersucht	540	7.020,00
Kümmernwachstum	0	0,00
Umfangreiche Verletzungen	23	299,00
Farb-, Geruchs-, Konsistenzabweichungen	49	637,00
Entzündungen der Leibeshöhle, Organe	53	689,00
Entzündungen der Haut, Unterhaut	90	1.170,00
Entzündungen der Gelenke	315	4.095,00
Maschinenschäden durch Fehlsortierung	10	130,00
Sonstiges	0	0,00
	0	0,00

Verworfen Tiere ohne Masterbezug

Maschinenschäden	0	0,00
Ausblutmangel	0	0,00
	0	0,00

Verworfen Tiere Gesamt

540 7.020,00

19. DEZ. 2014

(Datum, Unterschrift amtlicher Tierarzt)

K. Gense
Amtlicher Tierarzt

nicht ordnungsgemäßer Befüllung der Container (Stck. / Lage) und erhöhten Fehlsortierungen behalten wir uns vor, die
ständigen Kosten in Abzug zu bringen.

adVee
DIERENARTSEN

Results slaughter house

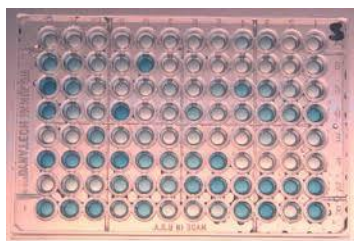
- ✓ Condemnation rate
- ✓ reasons



Voor Gezond Boeren

Results - Remarks

- Flock marked: ★ not vaccinated
- Flock marked: ● first flock vaccinated
- Flock not marked is vaccinated
- PCR at slaughter age: not a clear sign! Sometimes positive, at this moment not clear if a positive result is caused by the vaccine strain
- Serology (ELISA) at slaughter age:
 - Before vaccination mainly positive, but also flocks with clinical signs, even PCR positive tested are giving sometimes a negative result in the ELISA!
 - During vaccination always positive (field strain/ vaccine strain?)



Results – Remarks

- Results are from both fattening farms and only the toms are discussed!
- Hens are not the problem.
- Medication cost is total of antibiotics and vaccinations, male and female, including the MS-H vaccination
- Not every flock is the same brand of turkey's: B.U.T. big 6, Hybrid XL or Converter, TP 9. But before the start of MS vaccination this situation was the same!!
- When looking to the kind of antibiotics used, the amount of “MS related antibiotics” decreased 50-60%. A small part is replaced for Clostridia related antibiotics (penicillin and amox).

What can we say after using the MS-H vaccine?

We see:

- ✓ Healthier turkeys
- ✓ Less problems related to Mycoplasma Synoviae
- ✓ Lower use of antibiotics
- ✓ The management is become less important to the farmer because of the better results!! (and he wants to stop vaccinating!)
- ✓ Quality of the slaughtered turkeys has been improved
 - Less condemnations
 - Better BW
 - Better FCR



Thank you for your attention!

adVee
DIERENARTSEN

and a thank you for:



Australian Brush Turkey