Infections with *Chlamydiae* can be effectively eradicated using herd specific autovaccines in cattle populations

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Objective: Therapeutic treatment of dairy cows infected with *Chlamydia (psittaci)*

background

Normally 30-80% of a herd can be infected.

The rate of abortion reaches up to 30% if *Chlamydia* infections are common in a herd while the usual rate is below 1 %.

The economical loss is estimated at 1000-1500 $ per abort!

Amongst the clinical manifestations are mastitis, arthritis and conjunctivitis as well as pneumoniae in calves.

In sheep herds epidemics are common, in cattle populations epidemics are reported frequently.

Standard treatment (Germany) for Chlamydia infected cows:

antibiotic treatment using tetracycline i.m.

tetracycline sticks deposited in the uterus

uterine flushes using 5% iodine in ethanol

- - - - - - - - → effectivity varies

- - - - - - - - → expensive

Definition: autovaccine or autogenous vaccine

therapeutic vaccine manufactured from a disease causing pathogenic micro-organism — strain and patient specific in veterinary medicine often herd or flock specific

- therapeutic — treatment of ongoing infections
- immunogenic (?) — modulation of the patients immune system.
- intended to stimulate the immune system, not to hit the micro-organism directly—therefore no development of resistance
- highly specific, independent of antigenic variability
- cheap to manufacture
- no governmental approval required

Method: Autovaccines were prepared* from index case (i.e. abortion caused by *Chlamydia spec.*).

procedure

cervical swabs (obtained from herds in which the index case was recorded) were screened by *Stamp* staining of inclusion bodies

herds were treated with the herd specific autovaccine four times (one dose on every 5th day). Randomly chosen *Chlamydia* positive cows were examined in detail

cervical swabs were taken from the chosen cows after completion of autovaccination (i.e., day 28 after 1st dose of autovaccine) to check for the presence of *Chlamydiae*

** patent pending DE/PCT/EP*

Stamp staining

routine screening method in veterinary diagnostics* to check for the presence of *Chlamydiae*

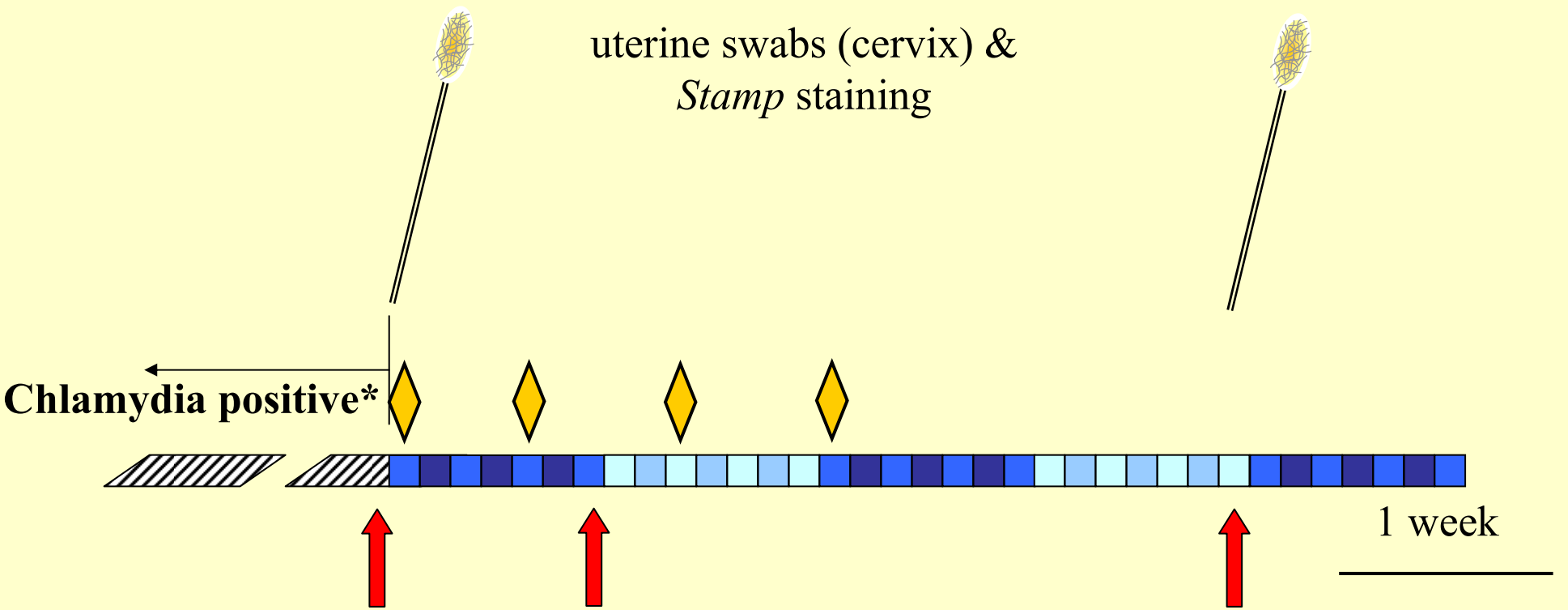
(cervical) swabs are smeared on slides and subsequently stained using carbolfuchsin (Ziehl`s stain)—1% acetic acid—0.2% Malachite Green.

both forms of the Chlamydia are stained intensively red whereas the background is in light green.

Stamp staining is also good for staining of *Coxiella*, both micro-organisms, *Chlamydiae* and *Coxiella* differ in their morphology

* one of the methods recommended by the *Bundesministerium für Ernährung, Landwirtschaft und Forsten* [Ministry of food, agriculture and forestry] (order BGBl. I S. 1178; September 1999)

Outline autovaccination



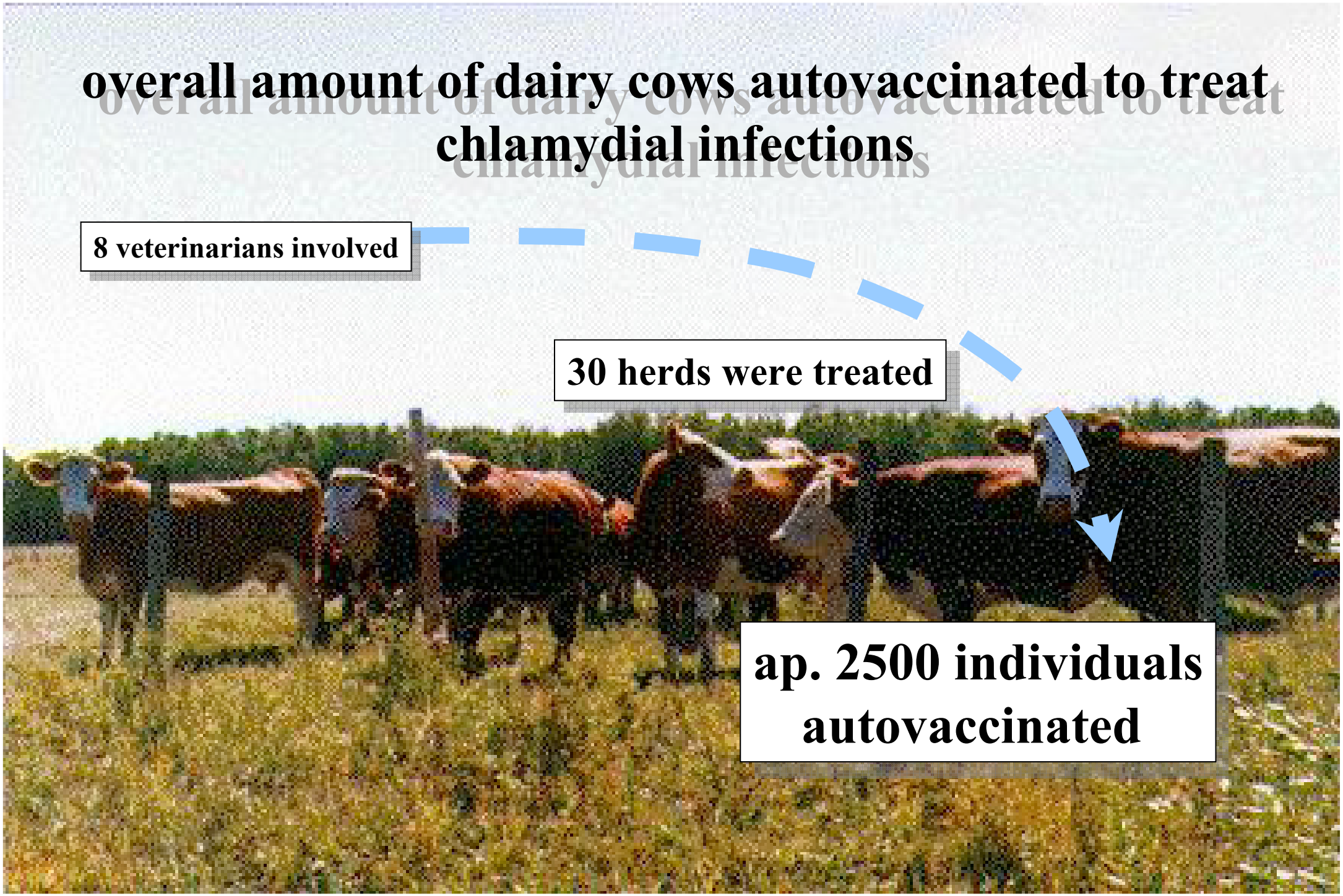
Diagrammatic representation of disease state, immunisation schedule and sampling of blood. (◊) denotes subcutaneous/intranasal or intravaginal immunisation, (↑) and denotes blood/serum sample

*** often suffering from metritis and/or reduced fertility**

overall amount of dairy cows autovaccinated to treat chlamydial infections

8 veterinarians involved

30 herds were treated



ap. 2500 individuals autovaccinated

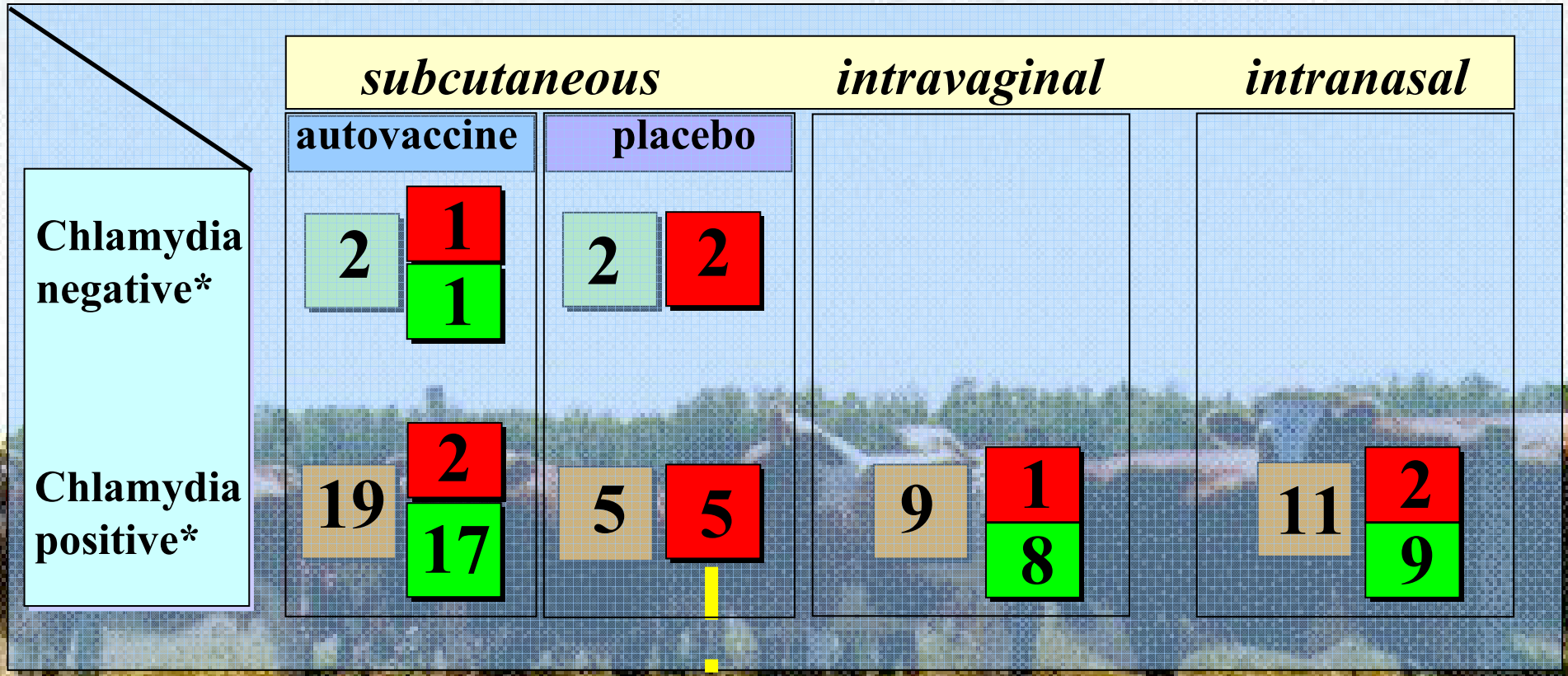
route of application

	subcutaneous		*intravaginal*	*intranasal*
	autovaccine	**placebo**		
Chlamydia negative*	**2**	**2**		
Chlamydia positive*	**19**	**5**	**9**	**11**

** as determined using Stamp staining*

Σ=48 (out of five different herds)

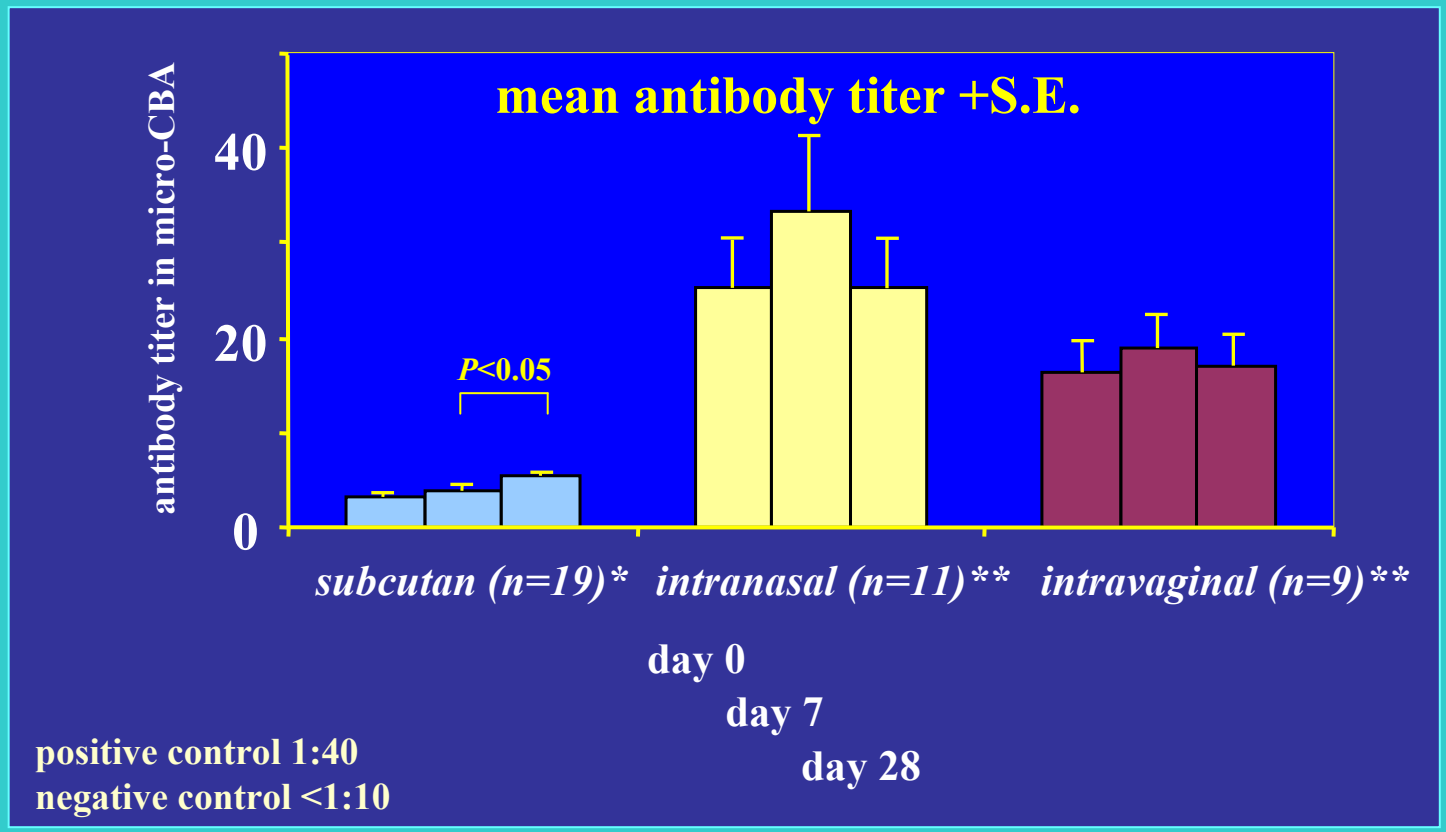
Results (28 days after start of autovaccination)



5 groups of animals Σ=48

Chlamydia positive autovaccine:	41	negative after av:	36	=87.8%
Chlamydia positive placebo:	5	negative after pl:	0	
Chlamydia negative autovaccine:	2	negative after av:	1	
Chlamydia negative placebo:	2	negative after pl:	0	

Results: Serum antibodies against *Chlamydia psittaci* antigen in micro complement binding assay



* belonging to 3 different herds

** belonging to 2 different herds

Conclusions:

Autovaccines seems to be a useful and effective method for the treatment of *Chlamydia* infection.

Examination of uterus swabs revealed that more than 87% of autovaccinated cows were *Chlamydia* negative afterwards.
The veterinarians reported decline to normal abortion rate and normal metritis incidence in herds treated with the autovaccine.

However, the immunological background remains unknown.

Autovaccines are cheap and can be given even to pregnant cows.

The observed side effects were minor, only after intravaginal application cows showed an increased sensitivity. No serious side effects were observed.