New disease control solutions for an evolving world

Ceva recently held their Poultry Vaccinology Summit in Athens, Greece entitled New Disease Control Solutions for an Evolving World.

The symposium contained a session that was dedicated to broilers. Ceva's own Pascal Paulet set the scene with his presentation on strategies for disease control.

The corporate vision is centred on listening to customers and defining their needs. These are then satisfied by supplying innovative vaccines and the best application systems supported by excellent veterinary services. Their network in R&D has developed 31 vaccines over the last 15 years at centres in Brazil, the USA, Canada, China and Japan, as well as Hungary and France.

Ceva's innovative vaccines are based on choosing the best technology to address the disease(s). They focus on protection, safety and no field reactions in order to satisfy their customers' requirements of reduced usage of antibiotics, taking into account at all times the economic pressures on the industry and profitability.

Their infectious bursal disease (IBD) vaccines are designed to stop the Gumboro cycle by blocking infection of the bursa of Fabricius by any type of IBD virus. This results in the prevention of challenge risk cycle after cycle by stopping the build-up of existing field viruses and preventing the selection of new strains of IBD.

Vectormune ND – their new solution for addressing Newcastle disease – gives maximum protection with no side effects and reduces the shedding of Newcastle disease virus.

Their Cevac IBird infectious bronchitis (IB) virus vaccine is designed for the hatchery to achieve a consistent regular application. This means symptoms of IB are controlled

Table 1. Impact on viral shedding.

Vaccination	R
No vaccination	2.08
Inactivated H5N2 vaccine	2.70
Vectormune AI	0.20

and there are fewer losses and less field virus circulation. This necessitates the use of proper equipment and the generation of protection data according to IB field infection pressure – two areas in which Ceva have species specialist expertise.

Reducing viral shedding

To illustrate the ability of a vaccine to reduce viral shedding, Pascal used the example of Ceva's Vectormune AI avian influenza vaccine and a trial in which birds vaccinated with it were challenged by a 2008 stain of HPAI H5N1 influenza virus.

A measure, known as 'R', is the number of chickens contaminated by one infected chicken. Obviously, if vaccination is to significantly impact viral shedding, R must be significantly less than 1.0. The results from this trial are shown in Table 1.

When it comes to vaccine application, Ceva's Ecat-ID and Desvac Campus come to the fore. Between them they have plenty of staff in R&D and in the field to ensure the correct implementation of their C.H.I.C.K. Program, including everyday equipment maintenance, team training and auditing the quality of vaccine application.

Their equipment ranges from bird and chick vaccinators through to hatchery spray and in ovo vaccinators.

Their C.H.I.C.K. Program has recently been given added status by being independently audited and controlled by the Bureau Veritas Group.

For veterinary services, Pascal sees this team as being experts capable of running meaningful trials that have real impact. They provide valuable monitoring services, solve problems and share their expertise in house and with customers via dialogue and training.

IB epidemiology in Italy

Mattia Cecchinato shared some interesting information and data on IB epidemiology in Italy. A significant proportion of the Italian industry is concentrated in central northern Italy. Italian surveys have shown many of the IB viruses to be QX or 793/B, with some Q1, D724 and Massachusetts viruses being found. Both QX and 793/B genotypings peaked in 2015 and isolations of this particular genotype peaked between days 31-40 into the broiler crop.

Mattia reflected on factors that can impact on the epidemiology of IB. First to be considered were the factors which can influence the prevalence of different IB genotypes.

He highlighted the effects of a wrong or different classification of the IB genotype, stressing the importance of having a harmonised classification system that everyone uses.

Another factor influencing the prevalence of different genotypes of IB vaccine in the field could lie in the fact that different diagnostic methods are used. Another issue in this discussion was how to distinguish between vaccinal and field strains in the field.

He highlighted that when 793/B vaccination ceased, the pattern of IB virus isolates from the field moved from being a mix of 793/B and QX to being QX virus on its own. In their study in northern Italy, just over 560 samples were tested between 2012 and 2016 and 195 QX strains were identified. They showed that dual vaccination was efficacious and it had a direct impact on viral spread and clinical outbreaks.

The symposium then progressed into considering the concept of dual vaccination with Cevac IBird and Cevac Mass L. The first question posed was could these two vaccines be administered

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Test group	Viral titre (ID_{50} per ml)	
	Massachusetts	1/96
H120	$10^{4.99}$	Negative
Mass L	$10^{3.90}$	Negative
Mass L + IBird	$10^{3.98}$	$10^{3.86}$
IBird	Negative	$10^{3.97}$

Table 2. Compatibility of vaccines.

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together? This was answered by the trial results shown in Table 2.

Needless to say, various other questions were asked, for which satisfactory answers are available, but in essence the take home message was that no differences are seen in the kinetics of IBird, whether it is administered alone or in combination with Mass L.

Respiratory health care

In the layers session, Kobus van Heerden Ceva's Corporate Range Manager, reflected on respiratory health care in cage and alternative production systems.

Kobus sees the management of a whole range of layer diseases revolving around five key aspects, namely FLAWS and management, biosecurity, cleaning and disinfection, vaccination and the birds having a competent and fully functional immune system.

When it comes to vaccination, he identified product, application and monitoring as the three facets that management need to focus on (Table 3).

The importance of reducing viral shedding was highlighted and discussed in some depth. The key point to come out of trials with Vectormune ND, that were carried out in various countries around the world, was that in all instances the shedding was less in the Vectormune ND vaccinated birds when compared to birds vaccinated with a killed Newcastle disease vaccine. The trial used the local field strain as the one used for the oro-nasal challenge of the vaccinated birds.

E. coli management

Eric Thibault, Clinical R&D and Customer Relations Director of Biovac, focused on E. coli management in layers. Although an old disease with a long history, E. coli is still quite widespread today and is implicated in 50% of oophoritis-salpingitis cases, some 35% of air sacculitis-pericarditis, 105 septicaemia and 5% of arthritis cases.

If you look around the world fate seems to be favouring E. coli with increasing antibiotic resistance problems, but the good news is that vaccination, especially with autogenous vaccines, appears to be successful. For example, post vaccination cumulative mortality in one commercial situation was 4.55% with an O78 autogenous vaccine compared to 12.54% in non-vaccinated controls.

In another example, Eric cited a breeding company who vaccinate 32 flocks with E. coli O1-O2-O78 autogenous vaccine and this produced a 45% reduction in mortality at 60 weeks. This trial involved almost 600,000 birds and gave the company a financial benefit of €3.69 per hen. Today >90% of layer breeders in France receive an autogenous vaccine against E. coli.

In addition, benefits such as reduced mortality and increased percentage of healthy chicks are seen. For E. coli vaccination to work it is important that the E. coli serotype(s) involved are correctly identified – to date some 25 have been identified with O2 (36%) and O78 (22%) being the two most common. ■

Table 3. Management of vaccination.

Product	Application	Monitoring
Safety Efficacy Quality	When? Where? How? Consistency Uniformity Reducing handling	When? How? What is expected Troubleshooting