How to optimize the timing of in ovo vaccination?

When using in ovo vaccination in your hatchery, several important decisions need to be made about the way in which it is organized and delivered.

Two key points are (1) when to vaccinate and (2) the correct point on the egg surface to deliver the vaccine.

So how do you establish the best time (stage of development) to carry out the vaccination?

This can often be overlooked, people preferring to vaccinate according to organizational convenience rather than aiming to optimize embryo response.

For in ovo vaccination to be effective, the vaccine must be delivered to the amniotic fluid or into the embryo itself. If deposited in the yolk, the allantoic fluid or the air cell of the egg it will not work well. Suppliers of in ovo vaccines and vaccination systems advise vaccinating between 18 days 12 hours and 19 days.

Regardless of the pre-determined vaccination time, it is helpful to monitor embryo development through visual evaluation of sample embryos just before vaccination. Use the information collected to optimize the time when eggs are vaccinated: the optimum time is when the yolk is being pulled into the abdomen.

Many factors can widen the spread of hatch time, so it is worth doing some strategic checks on factors known to increase hatch spread (see below) and adjusting vaccination time or, if appropriate, correcting them if shown to be an issue.

Samples need to be taken at different places in the incubator to identify whether chronological age and physiological age are close, because any divergence may directly influence the site of application and therefore the effectiveness of the in ovo vaccine.

Vaccination must start after internal pipping, again because the embryos may not be in the ideal position to receive the vaccine and so it will not be delivered to the appropriate place.

So for maximum vaccination impact, we must pay attention to the uniformity of embryo development at the time of vaccination.

This can be affected by:

- **Type of incubation (Single Stage X Multiple Stage);**
- **High or low temperature and humidity;**
- **Problems with turning angles below 38°;**
- **Inadequate ventilation;**
- **Age of the breeders;**
- **Size, weight and shape of eggs;**
- **Storage duration of the eggs;**
- **How long the eggs have been incubated and the development stage reached by the embryos. This may be affected by egg age at set, breed (for example, Ross® 708 hatch faster than Ross 308) and generation (broilers hatch faster than parent stock).**

These factors can directly influence the effectiveness of vaccination, hatchability and chick quality.