

Newcastle disease – compulsory vaccination

George Arzey

Senior Veterinary Officer, Avian Health, Animal Biosecurity, EMAI

Marilyn Evers

Strategy Leader, Animal Biosecurity, Young

Vaccination for Newcastle disease

Vaccination of commercial chickens against Newcastle disease (ND) is compulsory across NSW. 'Commercial chickens' are domestic poultry that are managed in a group of 1000 or more. ND vaccination must be in accordance with the agreed national standards.

Why is Newcastle disease a problem?

An outbreak of ND can have devastating effects on individual producers. All classes of chickens (i.e. pullets, layers, breeders and broilers) are vulnerable. Whole enterprises can be wiped out when stock are slaughtered, and product withheld from customers. Restocking may take months, during which time market share can be severely curtailed. Independent layer operations are particularly vulnerable.

A disease outbreak can also impact on:

- other producers within the locality, who will have to comply with movement restrictions and intensive surveillance
- the wider chicken industry, through a downgrading of Australia's current ND-free status
- other poultry and poultry-based industries, such as ostriches, emus and pet foods.

What are the benefits of ND vaccination?

Vaccination is the single most effective means of protecting birds of any age against ND. Under current international agreements, Australia is able

to vaccinate against ND while still being recognised as ND-free.

ND vaccine can be safely administered to all types and ages of chickens, both domestic and commercial.

Two types of vaccine are readily available in Australia: a live (V4) vaccine, and a killed (inactivated) vaccine.

The live (V4) vaccine is mild and very safe, but does not produce a long-lasting immunity; hence the need for a killed vaccine, that can be given several weeks later to safely boost immune levels.

Because of the variation in the length of immunity, there is a nationally agreed vaccination procedure, to ensure that all birds receive adequate lifetime protection.

The procedure specifies the type of vaccine to give at each age and for each class of bird, and can be found at:

www.dpi.nsw.gov.au/aboutus/about/legislation/approvals

Are there any problems associated with ND vaccination?

The Australian live (V4) vaccine is mild, and has no reported side effects. It can be safely given to all classes and ages, including one-day-old chicks; however, it only provides short-term immunity.

Care must be taken to follow label instructions when administering the killed (inactivated) vaccine, particularly during lay. The vaccine should ideally be given into the breast muscle, but may be injected subcutaneously in the neck. The effect of handling can cause a small, transient drop in egg production (1–2%).

Care should also be taken if giving other vaccines at the same time as ND vaccine. For example, infectious bronchitis vaccine can, if given at the same time, reduce the effectiveness of ND vaccine. Ineffective vaccination against Marek's disease or



infectious bursal disease (IBD) could reduce the ability of a bird to respond effectively to ND vaccine.

Do I have to vaccinate my birds for ND?

Yes – if you run a commercial flock you must vaccinate. There is a notification under the Stock Diseases Act 1923 that establishes all of NSW as a protected area for ND (Notification No. 1771). A further notification requires all owners and persons in charge of commercial domestic poultry to vaccinate their birds against ND (Notification No. 1772).

Details of the legislation can be found at: www.dpi.nsw.gov.au/aboutus/about/legislation/stock_diseases_legislation/notifications

Is there any withholding period following ND vaccination?

There is no withholding period for either eggs or meat following use of the ND vaccines.

Killed vaccine can, however, produce a small, transient lump at the vaccination site, so it is better to vaccinate meat birds with live vaccine. It produces no lesion, and will give them sufficient protection until they are slaughtered at 8–10 weeks of age.

What does it cost to vaccinate?

At time of writing, the cost of vaccination is approximately 20c-25c per bird (home labour) or 25c per bird (contract labour). Costs can be reduced by vaccinating in conjunction with other activities (e.g. debeaking).

How do I obtain and use live (V4) vaccine?

First, you need to complete an [application for an authority to obtain Newcastle disease vaccine](#). The form must be faxed to 02 46406300, to be authorised by the NSW Manager, ND Vaccination Program, or their delegate. You can then purchase your vaccine from your local reseller, or directly from a vaccine company.

Live (V4) vaccine is supplied in phials of 1000, 5000 and 10 000 doses, and is administered in drinking water.

The vaccine **must be kept frozen** to retain its effectiveness. This means it must always be transported on ice, and stored in a freezer at -20°C.

Drinking water should be withdrawn 2–3 hours before vaccination commences, to ensure that chickens are thirsty. Water lines and water tanks are then emptied. You must not clean the lines or tanks with chemicals or soap, as this can inactivate

the vaccine. You may flush the water lines with clean water if necessary.

Once the lines are empty, open the water valve into the water tank, and fill with just enough fresh water for 1–2 hours drinking.

The required volume for layers is 250 L of clean water per 5000 birds.

You need to mix 2.5 grams of skim milk powder for every litre of cool water; for example:

- 600 g skim milk powder per 250 L water
- 1.25 kg skim milk powder per 500 L water
- 2.5 kg skim milk powder per 1000 L water
- 5 kg skim milk powder per 2000 L water.

Do not warm or boil the water if you have problems dissolving the powdered milk.

The vaccine must first be mixed in a small, clean container (**no soap or disinfectants**) that contains 3–5 L cool water, already mixed with 20 g skim milk powder. Ideally, you should use a clean 5 L plastic bucket.

Open the vaccine phial and dip it into the bucket, filling it with the water. Pour the contents of the phial into the bucket, and then repeat, filling the vaccine phial with water and emptying it several times, to ensure no waste of vaccine.

Pour the bucket contents into the water tank and mix thoroughly. Open the valve out of the tank and allow the water to flow into the drinking lines.

It may take several minutes before the vaccine mixture reaches the nipples or cups. You should always walk around and check that all nipples and cups are functioning.

How do I obtain and use killed (inactivated) vaccine?

First, either you or your vaccination contractor needs to complete an [application for an authority to obtain Newcastle disease vaccine](#). The form must be faxed to 02 46406300, to be authorised by the NSW Manager, ND Vaccination Program, or their delegate. You or the contractor can then purchase the vaccine from your local reseller, or directly from a vaccine company.

Killed (inactivated) vaccine is available in 500 ml bottles. One bottle is sufficient to vaccinate 1000 birds.

Once purchased, the vaccine **must not be frozen**. Store in a refrigerator, at between 4°C and 8°C.

Vaccination can be done by either a producer or a vaccination contractor. The decision to employ a contractor rests entirely with each producer. The estimated labour cost involved in the employment

of a contractor is approximately 10–15c per bird, depending on the size of the flock.

If you decide to do your own vaccination, you will need to follow these guidelines:

- The vaccine must be administered by injection.
- The site of injection is either the breast muscle or thigh (intramuscularly), or the neck (subcutaneously). Inexperienced operators are advised to inject the breast, as no vital organs can be damaged using this method.
- The full recommended dose (0.5 ml per bird) must be administered.
- The use of a vaccination gun is recommended. The gun must be designed for the specific kind of bottle in which the vaccine is supplied. Use the needle supplied with the gun.
- Shake the bottle well before and during use, and watch for leakage from the injection site or air vacuum (and reduced dose delivery) in the gun.
- If in doubt about an individual bird missing the injection, administer another dose. The vaccine has a good safety margin, and a double dose will not harm the bird.
- If you plan to vaccinate a flock over more than one day, it is advisable to inject the volume of vaccine required for subsequent days into a suitable bottle, and then refrigerate it. This will prevent the vaccine from being exposed to high temperatures for an excessive period of time.
- The vaccine can be administered in conjunction with other inactivated vaccines (e.g. egg drop syndrome 76 vaccine), but do not mix two vaccines in the same bottle unless you check with the vaccine supplier first.
- Make sure the needle is replaced often (every 500–1000 birds), to ensure that the needles used remain sharp. Blunt needles cause more pain than sharp needles.

- It is important to return vaccinated birds to their original cages, to avoid disruption of the pecking order. In barn or free range situations, pile-ups could result in significant losses.

Is the killed (inactivated) vaccine safe for handlers?

In case of accidental self-injection or accidental injection of a team member, seek medical advice immediately. The adjuvant is an irritant, and may cause massive swelling if injected into a confined space, such as a joint.

How do I get more advice on ND vaccination?

For further advice, contact your vaccine supplier or veterinarian, or phone George Arzey on 02 46406402.

© State of New South Wales through NSW Department of Primary Industries 2007. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute NSW Department of Primary Industries as the owner.

ISSN 1832-6668

Check for updates of this Primefact at:
www.dpi.nsw.gov.au/primefacts

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (September 2007). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

Job number 6906