

National Newcastle Disease Management Plan 2008-12

30 JUNE 2008

VERSION 1.0 (23 JANUARY 2009)

*A national approach to the long-term
management of Newcastle disease in Australia*

CONTENTS

CONTENTS	2
INTRODUCTION	3
STRATEGIC RISK MANAGEMENT APPROACH (2008-2012)	4
PROJECT PRIMARY OBJECTIVES	5
IMPLEMENTATION OF THE 2008-2012 MANAGEMENT PLAN	8
THE PURPOSE OF SURVEILLANCE IN TASMANIA AND WESTERN AUSTRALIA	10
METHODOLOGY	11
EXIT STRATEGY	14
AHA COSTS AND FUNDING OF THE PLAN	15

INTRODUCTION

Newcastle disease (ND) prevention in Australia has been managed under the National ND Management Plan 2005-2007 following management plans that were in effect in 2002-03 and 2003-04. The Newcastle Disease Management Plan Steering Committee has subsequently developed a management plan that will operate for the period 2008-12. This plan includes several new elements designed to reduce the amount of vaccination required by the standard operating procedures (SOPs) and to ultimately lead to a risk-based exit strategy that may result in a minimal amount of vaccination or no vaccination in chicken flocks at the end of the management period (2012).

Ongoing vaccination represents an undesirable cost to the industry, as does monitoring, and the goal of removing the need for vaccination at the end of 2012 is reasonable. The vaccination program aims to out-compete precursor strains of ND virus that have sequences close to the virulent sequence and that might result in the emergence of virulent ND virus; thus, it is similar to the 2005-07 plan. The revised plan includes vaccination (according to nationally agreed SOPs) of commercial domestic chickens in all states and territories. In jurisdictions considered to be of low risk for an outbreak of ND, vaccination may be reduced as per the revised SOPs. However, in flocks that opt for reduced vaccination, surveillance protocols as detailed in this plan must be implemented.

More detailed background information can be found in the 2002-03 to 2003-04 National ND Management Plan and the National ND Management Plan 2005-07.

STRATEGIC RISK MANAGEMENT APPROACH (2008-2012)

A national approach to ND prevention and management is necessary to reduce the risk that circulating precursor ND viruses mutate into virulent forms, resulting in clinical disease.

The integrated national approach aims to deliver the following outcomes:

- minimised risk of ND outbreaks from Australian-origin virulent viruses
- reduced risk of negative social, economic and trade effects of ND at farm, regional and national levels
- a risk-based exit strategy by 2012 that will potentially minimise or eliminate vaccination as a requirement to prevent outbreaks of Australian-origin ND.

The proposed components to meet these outcomes are:

- application of poultry industry biosecurity plans and the strategic application and monitoring of vaccination using live V4 and inactivated vaccine, to reduce the spread of precursor viruses
- adoption of agreed risk management approaches
- surveillance to monitor circulating strains of ND virus
- management and evaluation to provide national coordination and to review the implementation of the 2008-2012 National ND Management Plan after two years.

Risk assessment, management and commercial drivers will play a major role in achieving these outcomes. There is scope to significantly reduce the risk of potential negative effects of the occurrence of virulent ND at a flock and regional level with existing technology. On-farm management programs, coupled with market-driven quality assurance programs, can successfully lower the overall risks.

The plan aims to engage a broad range of stakeholders including poultry farmers and processors, poultry organisations, governments, avian societies and ratite industries.

PROJECT PRIMARY OBJECTIVES

1. Implementation of vaccination and compliance with the SOPs by the commercial layer and broiler industries

Effective risk reduction using this strategy is aimed at:

- improving flock protection against ND virus; and
- the suppression of virulent precursor viruses to reduce risks.

A risk management approach has been adopted that involves vaccination according to recommended national vaccination SOPs.

In February 2008, governments and industry, through the ND Steering Committee, supported new management options including the use of modified vaccination SOPs as part of the long-term management strategy.

Vaccination compliance will be monitored by states and territories, utilising permit issuance data. The results will be collated by Animal Health Australia and reported to the Steering Committee and ND stakeholders on an annual basis. Monitoring of vaccine use can be achieved with minimum cost by:

- auditing permits to purchase and supply vaccine against lists of known producers, compiled jointly by governments and the respective industry organisations; and
- the monitoring of vaccine sales data.

Assessment of vaccination compliance

- Animal Health Australia to collect and collate annual vaccination permits data from state and territory chief veterinary officers for the 12-months period to 31 December and to provide this data to the Steering Committee by 30 June each year.
- Animal Health Australia to collect annual vaccine sales data from vaccine companies to 31 December and to present de-identified vaccine sales data (total vaccine sales only) to the Steering Committee by 30 June each year.

2. Ongoing surveillance is required to determine the ND viruses that are circulating in Australia

National surveillance

The Steering Committee supports the following elements of a national surveillance program as endorsed by the Consultative Committee on Emergency Animal Diseases:

- All poultry farms that report signs consistent with infection with precursor or virulent ND virus (e.g. unusual mortality, abnormal respiratory or nervous signs, sudden egg drop, abnormal soft-shelled eggs or white-shelled eggs in brown egg layers) must be investigated and samples must be taken for isolation of ND virus; other endemic disease investigations

should be used as an opportunity for attempting to isolate ND virus where appropriate.

- Diagnostic opportunities to monitor ND virus presence in poultry submissions to veterinary laboratories should be taken wherever possible.
- All isolations of ND virus and consolidated serology results from government as well as private laboratories must be reported routinely in quarterly returns to the National Animal Health Information System (NAHIS).
- All isolates of ND virus must be held at laboratories for at least 12 months.
- All isolates of ND virus from any farm where ND virus has not been isolated within the previous three months or where ND is suspected must be submitted to AAHL for sequencing (HN and F genes).
- The 2008-2012 National ND Management Plan must be reviewed after two years (for effectiveness, results, effects on industries and costs); the next formal review has been scheduled for 31 December 2010.

Response to further disease incidents under the EAD Response Agreement

In the event of any ND incident, the EAD Response Agreement provisions will apply (including cost-sharing) where all parties are meeting their obligations (e.g. vaccination, surveillance and biosecurity).

Outbreaks of ND will continue to be managed in line with the AUSVETPLAN Newcastle Disease Strategy Manual, as endorsed by Animal Health Committee and industry.

Ongoing surveillance, as a minimum, involves detecting flocks affected by virulent ND and precursor viruses and determining changes in the distribution, prevalence and types of ND virus circulating in Australia, including by opportunistic sampling of laboratory submissions.

States and territories are responsible for maintaining a database that includes details of:

- date of notification
- reason for investigation (mortality, morbidity, egg production problems, veterinarian suspicion, farmer reporting, investigation into other problems, etc.)
- location, address, geo-reference, species, type of enterprise and other characteristics (if applicable: cage, free range, number of sheds, etc.)
- class of poultry (pullet, layer, meat, breeder; chicken/duck/turkey, etc.)
- number of stock
- age
- mortality
- morbidity

- predominant clinical signs
- relevant vaccination history
- summary of sample collected and dates
- basis for suspicion/diagnosis
- if no ND diagnosis, the differential diagnosis and species' specialist comments
- date of diagnosis
- ND viruses isolated and their molecular characteristics.

NAHIS, through its database and *Animal Health Surveillance Quarterly* (with summary data in the annual *Animal Health in Australia* reports) will report:

- date of notification
- state/territory
- class of poultry
- findings
- ND viruses isolated and their molecular characteristics.

IMPLEMENTATION OF THE 2008-2012 MANAGEMENT PLAN

The ND Steering Committee in February 2008 endorsed several changes to the 2005-2007 Plan. These changes have the net effect of altering the vaccination and monitoring protocols for ND in several of the jurisdictions, as outlined below.

The 2008-2012 Management Plan is based on 3 different levels of activities being applicable across Australia. This has required modification of the SOPs as they were previously written (ND Plan 2005-07). The revised activities are now based on the level of perceived risk for an outbreak of virulent ND within Australia and are laid out below.

Level 1 – Tasmania and Western Australia

In these two jurisdictions, compulsory vaccination for broilers is no longer required. Layers and layer breeders must be vaccinated with a live vaccine; compulsory vaccination with an inactivated ND virus vaccine is no longer required. However, if producers wish to voluntarily vaccinate their layers or layer breeders using inactivated ND virus vaccine or their broilers in line with the previous SOPs (2005-07), **they will still be able to do so**. To support the low risk ND virus status (apparent from previous surveys and risk assessments carried out by the ND Steering Committee Surveillance Working Group) assigned to Tasmania and Western Australia, an on-going survey of broilers and layers will be conducted in those states to assess the serological profile of non-vaccinated flocks and to assess the nature of the sero-conversion if it occurs. For replacement pullets going to multi-age sites, a titre of 2^3 (which is considered by the Steering Committee the minimum standard to give protection against ND) at 16-18 weeks of age will be accepted as providing sufficient protection. The vaccination requirements for meat breeders remain unchanged, except that a lower-titre antibody response is now acceptable (see SOP).

Level 2 – Queensland and South Australia

For Queensland and South Australia, the compulsory use of the killed vaccine for layers and layer breeders will no longer be required. Producers wishing to use live V4 vaccine continuously must demonstrate that they are maintaining a titre of 2^3 . Producers who opt to continue the use of killed vaccines (i.e. current SOP 2005-07) will not need to demonstrate their compliance by serological monitoring. For replacement pullets going to multi-age sites, a titre of 2^3 (which is the minimum standard to give protection against ND) at 16 -18 weeks of age will be accepted as providing sufficient protection. In the case where titres are $< 2^3$, birds will be required to be re-vaccinated to achieve that titre.

The SOPs for broilers and broiler breeders have not been changed (except for a lower-titre antibody response in meat breeders) and remain as per the previous plan (2005-07).

Level 3 – New South Wales and Victoria

The existing SOPs are not changed. However, the wording has been changed to help clarify the vaccination and testing requirements.

ALL COMPONENTS OF THE PLAN (2008-12) WILL BE REVIEWED BY THE STEERING COMMITTEE AFTER TWO YEARS.

Implementation of agreed Standard Operating Procedures

Vaccination of all commercial layer, broiler, breeder and production flocks in all states and territories must be performed in accordance with the agreed SOPs. The national SOPs will continue to be monitored and amended as necessary to ensure their effectiveness.

THE PURPOSE OF SURVEILLANCE IN TASMANIA AND WESTERN AUSTRALIA

1. To support the low risk status of these two jurisdictions.
2. To demonstrate that the non-vaccinated chicken population (practical sentinels) remains free of ND virus.
3. To demonstrate that if sero-conversion occurs in these sentinels, it does not involve precursor or virulent ND virus.
4. To enable investigations of mortality or morbidity fitting the case definition in commercial poultry flocks in these jurisdictions.
5. To monitor the ND virus status of fertile eggs/day old layer strains introduced into Western Australia.
6. In the long term, to assist in the introduction of an exit strategy across Australia.

METHODOLOGY

Case definition for the purpose of this surveillance

Broilers

- any shed suffering mortality (not including culling) of 0.5% or higher per day for 3 or more days after the first week of placement
- any shed with evidence of respiratory signs lasting more than 2 days.
- any shed with nervous signs regardless of the duration.

Layers and breeders

- any flock (shed) suffering a 10% drop in egg production or the appearance of 5% white eggs or 5% shell-less eggs over a period of 2-3 days
- any flock (shed) suffering increased mortality of more than 0.5% per day for 3-5 days
- any flock (shed) where nervous signs or respiratory disease signs are detected.

The following approach (consistent with the chapter on ND in the OIE *Terrestrial Animal Health Code* 17th ed., 2008 and the approval of the Steering Committee Surveillance Working Group [May 08]) is to be used in Tasmania and Western Australia:

Broilers

1. Once the new SOPs are introduced, the broiler population in Tasmania and Western Australia will be sampled and tested, using serological and viral methodology, at intervals of 6 months, for a duration of one year.
2. The survey at 6 months intervals will include all broiler farms where birds are placed at the time or are already *in situ* and are not older than 28 days of age.
3. After 12 months (i.e. after two rounds of sampling), the results will be reviewed and decisions made (following recommendations to Animal Health Committee from the ND Steering Committee) as to appropriateness and approach to further surveillance.
4. For the purpose of the surveillance, and in line with the epidemiological definition that considers a flock to be “a group of birds managed as a single unit”, the broiler farm is considered to be a flock because the birds are of single age and sheds are located within metres of each other and managed as a single unit.
5. The sampling will consist of collection of tracheal and cloacal swabs from 10 birds (10 tracheal and 10 cloacal swabs) at 23-28 days of age for PCR/virus isolation and collection of 15 blood samples for serology at final slaughter (48-50+ days of age) collected at the processing plant.

6. The swabs will be pooled into 5 swabs per sample, with tracheal and cloacal swabs kept separately. They will be stored at -80°C pending results of serology. If positive by haemagglutination inhibition, the swabs held in store from earlier sampling will be processed for PCR/virus isolation.
7. During this period, passive surveillance will be undertaken as per case definition (see above). This will include serology (at least 15 blood samples), PCR (collection of tracheal and cloacal swabs from 10 birds) and histopathology on a range of tissues.
8. Operators of broiler farms keep records of mortality and are required to inform the integrator of any unusual clinical signs in the flock as part of their obligation under the contractual arrangements with the integrator. They are expected to notify the veterinary authorities should any of the case definition criteria be met in any farming operation.

Layers and breeders

1. During the 12 months period following the changes to the SOP, all flocks meeting the case definition (as outlined above) are to be fully investigated to exclude ND, using serology (at least 15 blood samples), PCR (collection of tracheal and cloacal swabs from 10 birds) and histopathology on a range of tissues.
2. Operators of layer farming enterprises will be expected to keep records of the parameters constituting a case definition and notify veterinary authorities should any of the case definition criteria be met in any farming operation.
3. This passive surveillance will be ongoing.
4. Incoming day old/fertile eggs from New South Wales or Victoria will be sampled for ND virus using PCR or virus isolation. This will be done using swabs on hatchery waste or the meconium of hatched day old animals. Ten composite swabs are to be taken from each hatch. They can be pooled into two samples.
5. The testing of incoming flocks in the hatchery will progress in two phases:
 - a. first 6 months – All incoming flocks into Tasmania or Western Australia
 - b. six to 12 months – 50% of incoming flocks into Tasmania or Western Australia
 - c. to cease after 12 months, pending assessment.

Laboratory/ test considerations

Laboratories testing for ND must use a standardised test supported by appropriate quality assurance and a proficiency testing program (e.g. the haemagglutination inhibition test as described in the Australian New Zealand Standard Diagnostic Procedure, with participation in a proficiency testing program coordinated by the Australian National Quality Assurance Program overseen by Animal Health Committee's Sub-Committee on Animal Health Laboratory Standards).

Birds that have not been immunised or infected with ND virus usually have titres $< 2^3$. Non specific titres above this level are rare.

Cross reactions between various paramyxoviruses are a consideration, but for the purpose of this surveillance this is not an issue because any flock with titres of 2^3 , or more than 20% of the titres with 2^2 , will be investigated further.

For the purpose of this surveillance, it is assumed that the sensitivity of ND virus haemagglutination inhibition test is 95%.

It is also assumed, based on surveillance during the ND outbreaks in New South Wales, that because broilers are on litter in a confined space, ND virus infection is likely to spread to 90% of the flock by the time they reach processing age, and (based on data during surveillance in South Wales and the practicality of broiler farming) that all sheds on the farm are likely to be exposed to ND virus if one shed is exposed.

EXIT STRATEGY

Ultimately the goal of the Management Plan is to enable a risk-based cessation or relaxation of vaccination requirements against ND. The first stages of the 2008-2012 Management Plan will reduce the amount of vaccination carried out in low risk jurisdictions. Following the review of the 2008-2012 plan after two years, it may be possible to recommend further modifications to the vaccination protocols. Any such decision will rely on the quantum and quality of surveillance in the national poultry flock to that point, and the prevailing evidence of precursor virus suppression or elimination.

AHA COSTS AND FUNDING OF THE PLAN

The Plan relies on significant financial input by industry because the cost of vaccination alone could amount to \$5 million. Costs of compliance with the SOPs will be met by poultry producers. Monitoring of compliance with the SOPs in each jurisdiction is the responsibility of the respective jurisdiction. Animal Health Australia will incur some costs in managing the national plan, but these are expected to be minimal (i.e. averaging approximately \$16,000 per annum, depending on the amount of time senior staff may need to apply to the purposes of the Plan). Costs for the management of the National ND Management Plan will be recovered in the proportions agreed for a response to ND under the EAD Response Agreement (50% government, 50% industry), rather than absorbed by all Members of the Company.

The following table shows the Animal Health Australia budget required to manage the National ND Management Plan; it includes cash components only.

Item	Target Date	Budget				
		2008-09	2009-10	2010-11	2011-12	2012-13
ND Steering Committee meetings/ teleconferences	Six-monthly	\$ 2,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000
ND Risk Assessment Qld and SA	30 June 2009	\$ 4,000				
ND Mgt Plan Review (Qld, SA, Tas, WA)	31 Dec 2009		\$ 4,000			
ND Mgt Plan Review	31 Dec 2010			\$ 5,000		
Management, administration and communication costs	Ongoing	\$ 10,000	\$ 6,000	\$ 7,000	\$ 7,000	\$ 8,000
Total		\$ 16,000	\$ 17,000	\$ 19,000	\$ 14,000	\$ 15,000