SOME UNIQUE THINGS ABOUT THE AUSTRALIAN POULTRY INDUSTRIES

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This conference has looked extensively at the Australian approach to our endemic poultry pathogens. From my experiences overseas I want to highlight some of the unique differences between global practices and our own Australian ones. The effect of forty years of quarantine on the range of infections seen here is interesting (no TRT for example) and I think the lack of pathogenic NDV in Australia for many years has meant that government researchers and vaccine companies could concentrate on other pathogens. New Zealand has also benefited from quarantine but has often chosen a slightly different approach (for example NZ has allowed extensive importation of the small number of vaccines that they needed for a long time and recently had to allow cooked turkey meat). Although poultry have been legally imported into Australia and New Zealand for the last 20 years it has been as hatching eggs from flocks of demonstrated high health status and under strict protocols effectively protecting the industries from scourges ravaging the rest of the world. Only pathogens with vertical transmission are a real threat with this system and ALV-J is the only one I would recognise that has got through these import requirements. Imported vaccine strains (for example ILT) have given the industries some problems.

Certain pathogens are absent from Australia or New Zealand and summarised in this table.

Pathogen	**Australia**	**New Zealand**	**Comment**
Highly Pathogenic Avian Influenza	Previously low path viruses can be found in wildlife, commercial ducks but not water. See other talks.	Not recorded	No active AI monitoring programmes. This causes export problems for commercial and SPF.
NDV (non "V4"	Development of concept that virulent		Analogous to Denis Alexander's pigeon

after 1966)	strains evolved from endemic strains of NDV and the definition of exotic NDV strains was creative.[1]		paramyxovirus definition on the ability to continue to trade.
Salmonella Enteritidis	No endemic infection in commercial poultry. Human cases in Australia are associated with overseas travel (Bali).	No endemic infection in commercial poultry. Government intervention on ST has been considerable.	Some flocks in Queensland have had SE isolated but not invasive phage types.
Salmonella gallinarum	Has not been reported since 1952		Brown leghorns are genetically susceptible
Salmonella sofia	About 1980 in breeders, broilers but not layers		Has recently decreased in incidence.
Salmonella pullorum	Not seen since the 1960s in commercial flocks		Current lack of active government supervised surveillance programme has made exporting difficult.
Mycoplasma iowae	Never been recognised		See Boyle, Good & Morrow 1995.
ORT	Not recognized.		Perhaps the need for 48 hours incubation has meant that it is missed.

[1] In the UK NDV vaccination of broilers is only practiced when the risk of virulent NDV infection is high (ND in adjacent countries) because of the production penalty of the vaccines in broilers. In contrast Australia has been very keen on vaccinating broilers to deny hosts for the evolution of endemic viruses to virulence.

Avian Hepevirus (Hepatitis E)	BLS first recognised by R. Cobb, P. Curtin, W. Williams and D. Marks.	Importation screening because W. Williams and D. Marks are now in NZ	Probably a from a wild bird reservoir with worldwide distribution.
Avian Metapneumovirus (TRT)	Limited serological survey by an ELISA with poor sensitivity produced negative results (Bell and Alexander 1990) but vertical transmission would be protected against by importation protocols.	Not recognized.	This could do with a systematic revisit to better define our status.
Infectious bronchitis serotypes recognised in other parts of the world	Unique viruses and vaccines (all breeders/layers and broilers are vaccinated). Current importation testing protocols would detect vertical transmission of IBV into Australia before release. No killed vaccines.	No vaccination of broilers but hyper-immunization of breeders with killed overseas strains	Armidale strain IBV vaccine has been registered in Malaysia (to ostensibly combat nephrotrophic symptoms) but no reisolations have been reported.
Reovirus tendonitis	Not recognised in Australia. Robertson, Wilcox &Kibenge 1984	Suspected in NZ and vaccination (live and killed) has been tried.	Tenosynovitis can be caused by some live Reovirus vaccines (Ross manual 1996)

In particular NZ is acknowledged as having no IBD infection in their commercial poultry by the OIE while Australia maintains that the endemic strains of IBD are so weak (only causing immunosuppression at the worst) that vaccination of broilers is not required[2] (nearly

[2]Although a vaccine strain from an Australian IBD isolate, V788 is considered to be an intermediate plus strain in terms of vaccine virulence and is not recommended to be used in broilers under 10 days of age

ubiquitous elsewhere). The broiler industries claim that this freedom from pathogenic effects of IBD infection compared to the rest of the world (where there are more virulent or variant strains) is a competitive advantage in terms of broiler health and performance and argue that very strict quarantine is essential to maintain this freedom/advantage. Certainly no clinical cases of Gumboro disease have been recognised[3]. IBD exclusion, it is argued by Australia and NZ, is the hardest pathogen to maintain and this has been supported by technical information on heat resistance of IBD to inactivation precluding even the importation of cooked product. This information to base risk assessments on was mostly generated by Weybridge and not published (but is in the risk assessments)[4].

Australia is the only country in the world with a live adenovirus vaccine. The FAV8 vaccine ensures seroconversion before the start of lay for breeders. This has not been adopted overseas. Australia still has problems with FAV8 but also other genotypes are emerging (as discussed at this conference). In Australia broiler mortality currently from IBH is usually late and can be considerable even in progeny of vaccinated flocks.

Alternating HVT and Rispens in generations is practised more in Australia than other parts of the world probably because Clive Jackson came up with the idea that maternal antibody interfered with these vaccines (see Harman, Jackson, Sinkovic, Webster, Jones & Gilchrist 1973). It was probably more of a problem with cell free HVT vaccines. For this reason Rispens/HVT combined vaccines have not been popular in Australia.

Killed vaccines have not been used much at all in caged layer systems except for EDS-76 and more recently NDV by Government regulation. Coryza vaccination was also used for a period in many flocks but has waned. Fowl cholera vaccination has only been used on problem farms (concrete floors and housing turkeys also decreased this problem) and is re-emerging with free range production systems.

Broiler coccidiosis control in Australia is unique with no withdrawal time for most coccidiostats. This means that they can be fed till the pickup which I suspect coccidiostat suppliers would tend to encourage because this would mean feeding massive quantities at end but perhaps this has limited resistance evolution. The coccidia have not been selected with a rescue option.

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[3]When I was working for Aviagen I was often asked if this was the true situation in Australia by my US colleagues and when I confirmed it was I could see in their faces that their opinion of me had dipped as they thought this was a charade but it does stop US, Thailand, Brazil and other countries exporting poultry meat to Australia and WTO challenges are always looming. Brazil are building a highway to the Pacific (Peru) which may increase their push to export to the pacific rim.

[4]An interesting new phenomenon; information generation but no publication in peer-reviewed literature so it is missed by academic reviews (for example "Diseases of Poultry"). In many ways this is similar to a lot of vaccine dossier information. I personally think that the Part II of vaccine registration Dossiers –manufacturing details should be kept commercial-in-confidence but the safety and efficacy information (Part III) should be put in the public domain so that prescribing/instructing veterinarians could make their own minds up about the claims.

Coccidiostat resistance is not well recognized in Australia. I suspect this lack of withdrawal periods all started before the APVMA. Uniquely in Australia and NZ coccidiostats are used at levels other than the licensed inclusion rate and there appears to be no limitations on combining coccidiostats so that registered combinations like Maxiban (narasin and nicarbazin) are used but also for example, combined monensin and nicarbazinis fed on occasions. Some integrators now use withdrawal feeds with no coccidiostat inclusion but only to save money.

Poultry management in Australia is a strange mixture of British and American systems. Broiler nutrition is usually aiming for maximum biological output (contrast US focussing on lowest cost). Beak trimming in breeders when practised is comparable with the UK (mild compared to Holland) so light intensity must run somewhere around or under 10 Lux. Some management practises are uniquely Australian or have survived here longer than in the rest of the world. For examples, probe sexing of breeders and 4 mm pellets in the broiler industry (Ross broilers when young appeared to think these big feed pellets were stones- it was larger than the size that the breeding programme selected on). Some management practises on introduction have mutated. Spin feeding of breeders in Australia often has little relationship to the practice overseas.

Australian poultry meat industry did not look at Zn Bacitracin as a growth promoter, in the US tradition, until some customers insisted that it was. Although avoparcin is still registered in NZ certain key customers insisted on its removal from diets. Trimethoprim/sulpha is used Marek's vaccines when required in Australia and Gentamycin in NZ. Overseas Ceftiofur was the favoured antibiotic but this is considered off label in Australia and illegal in food producing animals. NZ does not even have Amoxycillin registered for poultry.

So the background endemic situation has led to many modifications of poultry health management in Australia, some of which are discussed here and allowed us to see performance of birds with no IBD challenge (Mareeba, North Queensland and NZ). Overseas consultants arriving here often wonder why we do things the way we do – It is because we are working in a very different health environment in part from our years of quarantine and in my opinion worth preserving.

Finally the early success of effective mycoplasma control with locally developed ts vaccines has also decreased the dependence of the industries on antibiotics and buffered these industries from the effects of the removal of antibiotics - in fact now leading the world. Most poultry in Australia have no exposure to antibiotics (except ionophores in broilers for coccidiosis control) during their whole lives.