June 2004

DANDER

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President's Report

This year the AP5 conference "Harnessing Science for Poultry Production" was a great success and consolidates the decision of linking the AVPA conference with PIX every alternate year. Our extended gratitude goes out to Pat Blackall for undertaking the arduous task of organising the scientific program and all the logistics that go with it. He was ably supported by the executive and in particular the AVPA Secretary Jill Disint and Geof Runge of the PIX organising committee. The AP5 conference proved successful because of the good mix of topics that covered both current and future issues facing the poultry industry and its veterinarians. The quality of our local speakers is in part due to the Australian poultry industries fortunate position to have a strong poultry R & D section that is supported by the RIRDC (CMRDC), AECL, private industry and, more recently, the Poultry CRC.

The support provided by our sponsors and sustaining members is also vital for the success of our AVPA conferences not only in direct funding but also giving AVPA members a chance to socialise at a variety of functions. Our thanks go out to these sponsors as detailed in our AP5 Conference Proceedings. The international speakers at AP5 were chosen because of recognised excellence in their field and the quality of their presentations. This excellence was typified by the closing plenary session presented by David Cavanagh.

At the recent AVA Policy Council meeting in Canberra, which I attended, the AVPA demonstrated its quality as a Special Interest Group (SIG) providing one of the few annual activity reports, this having been prepared by Andrew. In addition to the report, I provided further information on issues facing the poultry industry and the veterinarians within it. This provided a basis for discussions from other SIG's particularly those from the rural and intensive animal sector. On the matter of non veterinarians and non AVA members being members of the AVPA, no concerns were expressed or noted by the AVA Policy Council.

With Australia officially free of virulent Newcastle disease, the disease concerns of the domestic industry have been minimal over the last year with the incidence of Marek's Disease uncommon and generally layer and broiler mortalities at historical low levels. However, this should not be a position in which to become complacent.

Therapeutic medication is becoming the exception to the rule and only used under the stringent guidelines as outlined in the AVPA's Code of Practice for the Use of Antibiotics in the Poultry Industry. It is to the credit to the Sub-Committee that prepared this document under the guidance of Tom Grimes that it will be referred to in the Victorian Veterinary Board's Guideline on the Supply and Use of Schedule 4, 8 and 11 Drugs.

Unfortunately there is a re-emergence of some of the classical poultry diseases with the movement of birds back into extensive husbandry systems. The role of the veterinarian to prevent and control such diseases is becoming more dependent, and correctly so, on ensuring proper husbandry and biosecurity practices are in place. The continued removal of registered veterinary medicines though will make the traditional role of veterinarians more difficult.

It was a great pleasure to induct two new life members to the AVPA; Leon Barlow and Balkar Bains. Both have been long time members and supporters of AVPA and we look forward to their continuing participation in AVPA activities.

Newly inducted life members, Balkar Bains (centre) and Leon Barlow (right), with AVPA President Peter Scott.

The Executive would also like to thank Mike Nunn for providing AVPA members with regular updates of the international avian influenza situation.

The AVPA has been encouraged over the last two years to foster good poultry science in the Australian Poultry Industry under the presidency of Andrew Turner. I am confident that we have achieved this as indicated by our successful scientific meetings, increasing membership and increased recognition of the AVPA by a number of government and regulatory bodies. This positive progression of the AVPA has no doubt been due to the enthusiasm, diligence and professionalism of our exiting President Andrew Turner.

Our activities for the next 12 months include the October 2004 and February 2005 AVPA conferences to be held in Melbourne and Sydney respectively, gather all our archival material and store it with the AVA archives section, be an active participating stakeholder in matters related to importation, avian welfare and veterinary medicines and continue our world prominence in avian R & D.

Peter C. Scott

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AVPA Office Bearers 2004 - 2005

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WVPA Bureau Member	Trevor Bagust	<trevorjb@unimelb.edu.au>
Editor Dander	Kevin Whithear	<kevingw@unimelb.edu.au>

AVPA Sub-Committee Convenors 2004 - 2005

Importation & Exotic Diseases	George Arzey	<george.arzey@agric.nsw.gov.au>
Therapeutics	Tom Grimes	<tomgrimes1@bigpond.com>
Welfare	John Barnett	<john.barnett@nre.vic.gov.au>

The Australian Veterinary Poultry Association is a Special Interest Group of the Australian Veterinary Association. Membership of the AVPA is available to individuals and groups working in, or interested in, any veterinary aspect of poultry.

Dander will be published quarterly (March, June, September and December). Contributions are welcome. Electronic copy is requested. Deadline for copy is by the end of the second week of the month of publication. Please send information on abstracts of interesting papers, summaries of reports, case histories, social news etc. to Jill Disint, School of Veterinary Science, The University of Melbourne, 250 Princes Highway, Werribee 3030, Victoria, <j.disint@unimelb.edu.au>, fax 03 9731 2366.

Summary of Upcoming Scientific Meetings

July 2004

***7th International Mareks Disease Symposium*,** Oxford, UK. Contact: Dr. M. Carr, Institute of Animal Health, Compton Laboratory, Newbury RG20 7NN, UK. Phone: +44 1635 577227; Email: margaret.carr@bbsrc.ac.uk. July 11-14.

***AVMA/AAAP Meeting*,** Philadelphia, PA. Contact: http://www.avma.org or, http://www.aaap.info; Email: aaap@uga.edu. July 24-28.

Sept/Oct 2004

AVPA Melbourne Conference. Contact: Dr. A. Noormohammadi; Email: Amirh@unimelb.edu.au. Date and venue to be confirmed.

February 2005

Australian Poultry Science Symposium. Contact: Prof. T. Scott. Email: toms@camden.usyd.edu.au. February 7-9.

AVPA Sydney Conference. Contact A/Prof. K. Whithear. Email: kevingw@unimelb.edu.au. February 9-10. There will be a joint session with APSS on the morning of February 9.

April 2005

***54th Western Poultry Disease Conference*,** The Fairmont Hotel Vancouver, Vancouver, BC, Canada. Contact: Dr. R.P. Chin; Email: rpchin@ucdavis.edu. April 25-27

August 2005

14th World Veterinary Poultry Congress & Exhibition, Istanbul, Turkey. Contact: Congress organiser: IT Consortium, Mete Cad. 16/11, 34437 Taksim, Istanbul, Turley. Phone: +90 212 244 71 71; Fax: +90 212 244 71 81; Email: info@wvpc2005.org. Website: www.wvpc2005.org. August 22-26:

MEMBERSHIP MATTERS

Thanks to all members who have renewed their 2004 AVPA subscriptions. If you haven't done so, please take out your chequebook now and make out a cheque of $50.00 to the AVPA and post it to the Honorary Treasurer today. Sustaining members will be contacted individually about renewing memberships for 2004.

Membership List (as of 21 June 2004)

If your name has been inadvertently omitted from this list, please accept our apologies and contact the Membership Secretary <j.disint@unimelb.edu.au>

Financial Members: Edla Arzey, George Arzey, Caroline Ash, Trevor Bagust, John Barnett, Susan Bibby, Glenn Browning, Wayne Bryden, Graham Burgess, Anthony Chamings, Neil Christensen, Harris Chow, Peter Claxton, Peter Coloe, Richard Coulter, Dana Cowan, Peter Cowling, Kim Critchley, Mike Cundy, Peter Curtin, Jules D'Assonville, Cameron Davidson, Susan Davidson, Andrew Demkowicz, Jill Disint, Laurie Dowling, Gordon Firth, Irene Gorman, Peter Gray, Tom Grimes, Peter Groves, David Hampson, Leearne Hinch, Penelope Hocking, Rod Jenner, Noel Johnston, Bob Johnston, Brian Jones, Wayne Jorgensen, Roberta Kaparthy, Vivien Kite, Phil Lehrbach, Mark Lindsey, Margaret Mackenzie, Michael McDermott, Paul McQueen, Cemlyn Martin, Gina Micke, Krystina Minkiewicz, Linden Moffatt, Robert Morton, Andrew Munday, Alistair Murdoch, Amir Noormohammadi, Mike Nunn, Denise O'Rourke, Selina Ossedryver, John Owusu, Barry Philps, Sarah Plant, Grant Richards, Rod Reece, Bruce Remington, Simon Robinson, Ambrosio Rubite, Amir Saleem, Peter Scott, Yoni Segal, Margaret Sexton, Joanne Sillence, Leslie Sims, Charissa Smith, Peter Spradbrow, Jillian Templeton, Andrew Thompson, Andrew Turner, Greg Underwood, Mustaphfira Wafi, Stephen Walkden-Brown, Andrew Walsh, John Walters, Ben Wells, Mark White, Pam Whitely, Kevin Whithear, Tim Wilson, Mary Young

Life Members: Balkar Bains, Leon Barlow, Roger Chubb, Dinah Fry-Smith, Paul Gilchrist, Harvey Langford.

Please see the AVPA website for information on sustaining members and links to websites

AVPA Sustaining Members

Sustaining members contribute funds that help defray costs of services to members of the AVPA. We thank all sustaining members for their active interest and support. We thank the following sustaining members for renewing their memberships for 2004.

Bayer Australia Ltd, 875 Pacific Highway Pymble 2073 NSW. (02) 9391 6218

Contact: Neil Cooper 0418 970 351 <neil.cooper.nc@bayer-ag.de>

Bioproperties Pty Ltd, 36 Charter Street Ringwood 3134 Victoria. (03) 9876 0567

Contact: David Tinworth 0418 334 766 <david.tinworth@bioproperties.com.au>

Elanco Animal Health, Level 5, Avaya House, 123 Epping Road, Macquarie Park 2113 NSW. (02) 9878 7744

Contact: Jim Aspinall 0427 704 972 <j.aspinall@lilly.com>

Fort Dodge Australia Pty Ltd, PO Box 6024, Baulkham Hills 2157 NSW.

Contact: John Reeves 0412 264 497 <reevesj@fortdodge.com.au>

Inghams Enterprises Pty Ltd, Locked Bag 4000 Liverpool 1871 NSW, (02) 9602 8744

Contact: Kevin McBain

Pace Farms, Locked Bag 800 Rooty Hill 2766 NSW (02) 9830 9800

Contact: Frank Pace fpace@pacefarm.com

Rural and Commercial Projects, Unit 8, 5 Bent Street Coffs Harbour 2450 NSW.

Contact: 0427 438 388 leonbarlow@bigpond.com

SPAFAS Aust Pty Ltd, PO Box 641 Woodend 3442 Victoria. (03) 5427 1466

Contact: Graham Murray 0418 325 769 <spafas@ozemail.com.au>

AVPA MELBOURNE SCIENTIFIC MEETING 2004

It has been proposed that the annual AVPA scientific meeting in Melbourne be held in September or October rather than November. Currently the meeting dates are: Odd year - February/Sydney, November/Melbourne; Even year- April/Gold Coast, November/Melbourne.

The AVPA membership was surveyed in June about shifting the date of the Melbourne meeting forward to September or October. Of responses received, 93% were in favour of a change in date. Late September or early October were the preferred dates, perhaps coinciding with school holidays.

It was also suggested by some respondents that alternative locations to Melbourne should be considered for some future September/October meetings.

A decision on the exact date and location of the next Melbourne meeting will be made soon. However, AVPA members should note that the next AVPA scientific meeting in Melbourne will be held in late September or early October rather than November

AVPA SYDNEY SCIENTIFIC MEETING 2005

The 2005 AVPA Sydney Scientific Meeting will be held on 9 – 10 February in conjunction with the Australian Poultry Science Symposium which runs from 7 – 9 February. There will be a combined APSS and AVPA session on the morning of Wednesday 9 February. Special arrangements will be in place for attendees who wish to register for both conferences, so that they don't have to pay twice for the combined Wednesday morning session.

MICROBIOLOGICAL REALITY AND THE EGG

George Arzey

Our intrepid investigator, Dr George Arzey, dissects 3 reports implicating eggs as the source of human *Salmonella* food poisoning. Could there be alternative explanations?

Case #1 – The egg sandwich

Those who might like to read the Brisbane Southside Public Health Unit Report would find the following description of Salmonella outbreaks associated with shelled eggs (December 2000):

A group of people became ill after eating egg sandwiches at a city sandwich shop.

Faecal samples from the affected people and samples of the egg mixture yielded Salmonella Mbandaka.

A clear case where the egg is the most likely source?

The Brisbane Southside Report provides the following details:

Boiled peeled eggs were supplied to the sandwich shop.
The supplier, who operated an illegal business in a residential kitchen, bought the eggs from egg farms.
The supplier boiled the eggs in a large saucepan, peeled the eggs in the kitchen sink and placed the peeled eggs in plastic bags.
The eggs were not refrigerated during transport to the sandwich shop.
Swabs from the supplier's kitchen sink and the saucepan were positive for S Mbandaka. The positive swabs from the saucepan were taken from ACCUMULATED FOOD RESIDUES at the bottom of the pot.

Clearly, this was a multi-purpose saucepan and it contained food residue! Is this a clue about the hygienic standards in this kitchen?

The farms supplying the eggs were not investigated.

The investigators were rather surprised by the unusual phenomenon of finding *Salmonella* in the bottom of the pot and tried to explain it by "food residues protecting the *Salmonella* organisms from the destructive heat".

While *Salmonella* spp. inside the yolk have been known to survive boiling when the core temperature post cooking was less than 60^0C, the survival of salmonella at the bottom of an aluminium/metal pot where temperature of 100^0C is very likely to persist during boiling (and slowly dissipate after boiling), is extremely difficult to reconcile with current microbiological knowledge of *Salmonella* heat inactivation.

The survival of *Salmonella* Mbandaka on the shells of the eggs following boiling for the duration it takes to produce a hard boiled egg is also unlikely and therefore it is unlikely that S Mbandaka found in the sink where the eggs were peeled could be attributed to the eggs.

The reasonable conclusions are:

S Mbandaka was present in the bottom of the pot as a result of cross contamination after cooking.

If S Mbandaka was present on the egg shell before cooking, finding it after cooking, embedded in food residues in the bottom of the pot is nothing short of a miracle and an expression of unsurpassed and unreported capacity 'to dig' and become instantly embedded in the food residues while the eggs are being cooked.

S Mbandaka was present in the kitchen sink before the eggs were peeled. Is it plausible to postulate that the boiled egg became contaminated AFTER the boiling process in a kitchen described as suffering from "ineffective cleaning regimes and inadequate storage practices"?

It is also likely that following surface contamination of

the peeled boiled eggs, further significant multiplication occurred during transport and also in the sandwich shop.

The egg provides an excellent medium for bacterial growth. There is no question that the egg sandwiches were rightly implicated in the human outbreak as the food vehicle that carried the S Mbandaka. But was the source of the S Mbandaka involved in this outbreak, the layer farm? Was the egg contaminated with S Mbandaka when it left the layer farm?

Unfortunately, the exact circumstances are lost when statistical data on egg implicated human outbreaks is compiled and this case would appear as a case implicating shell eggs.

Case #2 – Custard Pastry

A case in 1998/9 involving commercial pastry provides the following description (Epidemiol. Infection Vol 129 2002) of the method of preparation:

"Dry ingredients and hot water were mixed in a large bowl which was then placed on the CONCRETE FLOOR NEAR THE FLOOR DRAIN. Eggs and egg products were then added to the mixture. This was left from the morning un-refrigerated and uncovered to cool for the rest of the day. Some of the custard was put into REUSABLE cloth pipers that were then used to fill cakes. DURING THE HOT SUMMER MONTHS HOT CUSTARD WAS MADE AND SCOOPED FROM THE BOWL WITH BARE HANDS. It was then placed directly onto a marble bench top to cool".

No details are provided on the cleanliness or otherwise of the marble bench top or the hands.

Case # 3 – Egg Batter

Another case reported in Communicable Disease Intelligence Reports (CDI) Vol 26 N0 3 2002 page 389: "An outbreak of Salmonella Typhimurium phage type 64 in WA was epidemiologically linked to fried ice cream. The cause of the outbreak was related to several potential breaches in food safety Including:
1. USING RAW EGGS TO MAKE THE BATTER.
2. USING BREADCRUMBS that were **also** used for **crumbing** chicken and other meats.
3. Inadequate cooking".

There are several issues arising from this case.

A. The use of bread crumbs that were previously used to crumb chickens and other meats to crumb the fried ice cream demonstrates an immense potential for cross contamination from the chicken meat/other meats to the bread crumbs used for coating the ice cream.

B. The egg has been implicated by virtue of the fact that raw egg was used rather than any tangible evidence to suggest contamination of the egg with salmonella.

C. Epidemiological data could suggest that Salmonella Typhimurium phage type 64 (involved in the outbreak) is frequently associated with meat rather than eggs. Examination of NEPSS reports for the years 2000 - 2003 reveals that STM 64 has been isolated often from red meat/chicken meat but not once from shell eggs or raw eggs or from any layer farm.

Conclusions

These episodes demonstrate that in many cases it is not easy to untangle the EVIDENCE. However, when fundamental microbiological principles are considered the 'headache' associated with such 'funny tummy' cases could be alleviated with a 'small CSS pill (common sense and science) and also why a review article on eggs and Salmonella food poisoning (J MED Microbiol. Vol 34 1991) concluded that the role of shell eggs in Salmonella food poisoning is much exaggerated and prevention should be sought through improved catering practices and kitchen hygiene rather than attempting to eradicate Salmonella from laying flocks or implementations of costly on-farm prevention programs.

It appears that risk assessments, internationally and locally, target the farm level rather than the kitchen. International preoccupation with risk assessment associated with the shell egg is perhaps justified to a degree since Salmonella enteritidis, a known egg adapted serovar has been recognised as a problem overseas. However, S enteritidis has not been implicated in Australia in locally derived food poisoning cases.

It is also worth noting that even in circumstances encountered overseas, a nine years study in the USA found that only approximately 50% of the Salmonella enteritidis outbreaks were associated with eggs (Am J of Public Health Vol 84 no 5 859-860).

In Australia over 12 years there have been approximately 1350 reported human cases where eggs have been rightly or wrongly implicated (Arzey, 2004 Proceedings AP5 conference). Over this period of time approximately 30 billion eggs have been produced. This 'translates' to 22,400,000 eggs per one reported human case. Assuming the upper range of 100X of under reporting of 'funny tummy' cases associated with food poisoning, mild cases that do not require medical attention or do not need a medical certificate to take a sickie (Sumner et al Medical Journal of Australia Vol 172, 9), 224,000 eggs are apparently required to 'produce' one case of 'funny tummy'. If a person became extremely fond of eggs and ate an egg morning, lunch and dinner (21 eggs per week), 360 days per year for 100 years, this person would need to live to the ripe old age of 207 years to have a chance of suffering an egg related 'funny tummy'. As average reported egg consumption in Australia per capita is approximately 200 per year, the average Australian, based on current egg consumption, will need to live 1,120 years to have a chance of getting an egg related funny tummy.

During this period, presumably, our ability to untangle 'knots' would be resolved due the advent of good tracing system and DNA technology. It is not impossible to predict a brave new world where each egg and each 'little Salmonella' would carry a very little electronic chip enabling instant tracing (unfortunately humans would also be required to carry these chips for entirely different reasons). Until then, I suspect, eggs and other farm products are likely to provided the 'magical answer' to human Salmonella 'funny tummy' outbreaks even when science screams-impossible and the kitchen conditions transcend the most appalling hygienic conditions.

DRAFT MINUTES

Ordinary/Annual General Meeting, 21st of April, 2004. Held from, 5.15 pm to 6.50 pm, in the ANA Hotel, Gold Coast, QLD.

Attendees	Andrew Turner, Peter Scott, Jillian Disint, Kevin Whithear, Pat Blackall, Greg Underwood, Mark Lindsey, Susan Bibby, Clive Jackson, Jim Aspinall, Bruce Remington, Andrew Walsh, Neil Christensen, George Arzey, Edla Arzey, Sarah Plant, Trevor Bagust, Noel Johnston, Peter Groves, Graham Murray, Neil Cooper, Leon Barlow, Tom Grimes, Graham Burgess, Jillian Templeton, David Buckley, Amir Hadjinoormohammadi, Balkar Bains.
Apologies	Paul Gilchrist, Dinah Fry-Smith, Peter Cowling, Glenn Browning.

OGM Minutes

Andrew Turner opened the meeting.

Peter Scott moved that the minutes of the previous OGM and AGM be accepted. These had been published in Dander. Andrew Turner seconded the motion, motion carried.

Matters arising from the minutes:

Undergraduate scholarship program	Andrew Turner reported that 2 students had been through the program in Melbourne and that Peter Groves had also had a student through in NSW but not through the AVPA program. The Executive is looking to expand the program into NSW and QLD. Murdoch University and New Zealand are unable to do the program due to lack of suitable staff.
AVA membership categories	Andrew Turner advised that further clarification may arise at the AVA AGM.

AGM Minutes

President's report	Andrew Turner last report was published in Dander, January 2004.
Treasurer's report	Greg Underwood tabled 2 statements showing the financial position of the AVPA.

Clive Jackson asked about payment of AVPA subscriptions through the AVA. Andrew Turner explained that while this was possible, the AVA had not been passing on details of the members who had done this or the funds and expressed that it was better to pay the AVPA directly.

Tom Grimes suggested a note to this affect in the next issue of Dander.

Statement of Melbourne Conference tabled.

A vote on whether the membership fee from 2005 could be changed to $49.50 ($45.00 without GST+ $4.50 GST) was held and passed unanimously. This will enable much easier GST calculations.

Exotic diseases and imoortation sub-committee	George Arzey tabled 3 reports which are included in this edition of Dander. The main activities were the reduction of the post-arrival quarantine period from 12 weeks to 9 weeks and the importation of SPF eggs.

Discussion on the process by which subcommittee convenors should prepare their submissions ensued with the following outcomes:

1 – Subcommittee convenor should send the submission to the President then the President send it on to the endpoint. If the President decided that any changes were necessary than they would consult with the convenor first.

2 – Subcommittee convenors would send on documents to the membership through the secretary so the membership can be notified of issues under discussion and also have input into the submissions.

George Arzey was applying to be a registered stakeholder with AFFA. Thanks were given to Mike

Nunn for his regular updates on Avian Influenza.

Therapeutics sub-committee

Tom Grimes submitted a report, published in this edition of Dander.

Welfare sub-committee

No report issued and no items currently for consideration.

WVPA

Next conference in Turkey in August 2005.

Noted that the WVPA would like a link to the AVPA website on their website. Graham Burgess will organise this with Trevor Bagust.

Dander

Kevin Whithear asked if there had been any problems with the electronic sending of Dander – none raised.

Website

Graham Burgess reported that JCU had agreed to continue to support the AVPA website for free. He noted that if members had any problems or questions to raise them with him.

Some discussion on whether part or all of Dander could be put on the website was held. Andrew Turner felt that members should be getting something exclusive for their membership fees but other members didn't feel that keeping Dander just for member was necessary. The executive decided that they would discuss this further.

Election of Office Bearers

All positions were held open for election:

President – Peter Scott. Nominated by Kevin Whithear, passed unanimously. Peter Scott then took the chair as current President. He thanked Andrew Turner for his period as President.

President-elect –Position vacant.

Secretary – Jill Disint. Nominated by Andrew Turner, seconded by Trevor Bagust.

Treasurer and Assistant Secretary – Amir Hadjinoormohammadi. Nominated by Peter Scott seconded by Trevor Bagust.

Convenor, Importation and exotic diseases subcommittee – George Arzey. Nominated by Sarah Plant, seconded by Clive Jackson.

Convenor, Therapeutics subcommittee – Tom Grimes. Nominated by Peter Groves and seconded by Mark Lindsey.

Convenor, Welfare subcommittee – John Barnett. Nominated by Andrew Turner and seconded by Trevor Bagust.

WVPA Bureau member – Trevor Bagust. Nominated by Bruce Remington and seconded by Amir Hadjinoormohammadi.

Website co-ordinator – Graham Burgess. Nominated by Trevor Bagust seconded by Amir Hadjinoormohammadi.

Editor, Dander – Kevin Whithear. Nominated by Peter Scott, seconded by Andrew Turner.

Peter Scott noted that we needed to start planning for the succession of office bearers for when the current 2 year terms are completed. Clive Jackson suggested that a list of office bearers in previous years be compiled from archival material.

Other business

November meeting, Melbourne 2004.

Peter Scott nominated Amir Hadjinoormohammadi as scientific convenor but it was decided that the executive would do this as a whole.

Backyard poultry as a source of infection.

Peter Scott raised this issue for discussion. Trevor Bagust suggested that Jim Finger be consulted (in Victoria). Jill Disint suggested that lobbying councils to have poultry registered in the same way cats and dogs are may be an option.

Tom Grimes suggested that the executive put some thought into solutions and write these up in Dander. Noel Johnston suggested that poultry magazines brought by those with backyard flocks

may be a good source of information and contact points.

AVA constitution and AVPA membership

Mark Lindsey noted that the AVPA position of having non-vets as members had been put into the AVA constitution with the proviso that these members did not hold the position of President. There has previously been a motion put forward by Paul Gilchrist that the AVPA would disassociate from the AVA if this was changed and that this motion was still valid. Peter Scott will maintain this position.

Induction of life members

The two new life members proposed at the OGM in November – Leon Barlow and Balkar Bains, were both formally inducted.

Both gave speeches expressing their thanks.

The date of the next OGM was set for November 2004 and the AGM in Sydney in February 2005.

Meeting closed 6.50pm.

AVPA

STATEMENT OF FINANCIAL PERFOR

JANUARY 2003 THROUGH DECEMBER 2003

	THIS YEAR	LAST YEAR
Income		
Membership Subscriptions Ord.	$3,750	$6,986
Sustaining Memberships	$2,655	$0
Sponsorship		
Sales of goods and services		
PetPEP Program		
Conferences	$20,602	$8,215
Publications advertising		
Interest - AGC	$1,307	$1,881
Interest - NAB Chq A/c	$1	$0
Interest - NAB Term Deposit	$298	$0
Other	$2,199	$861
Total Income	$30,812	$17,943
Expenses		
Bank charges	$34	$0
Salaries and wages		
Employment oncosts		
PetPEP program		
Conferences	$18,982	$14,475
Newsletters	$1,600	$1,550
Committee/governance		
Business services		
Depreciation		
Scholarships	$2,200	$0
WVPA Subscriptions		
Postage	$56	$0
Other (please specify)	$80	$2,423
Total Expenses	$22,953	$18,448
Net Profit/(Loss)	$7,859	($506)

Annual Report of AVPA Therapeutics Subcommittee 2003-2004

Subcommitee Members: T. Grimes (Convenor), C. Jackson, R. Johnston, P. Groves, R. Jenner, S. McGoldrick

AVA Therapeutics Advisory Committee (TAC)

AVA TAC meetings were participated in on 21/8/03 and 24/3/04 at AVA House Artarmon. Relevant agenda items have included JETACAR implementation, harmonisation of control of use legislation, review of veterinary prescribing and dispensing in the UK, McDonalds antibiotic use policy, cephalosporin use in food-producing animals, scheduling changes of antibiotics by NDPSC, label restraint on veterinary medicines for use in egg layers, antibiotic resistance surveillance program and the APVMA reviews on virginiamycin and macrolides. Email discussions were required between meetings related to some of the TAC agenda items.

APVMA Virginiamycin Review

Input occurred with Andrew Turner into the AVA submission on the APVMA Special Review of virginiamycin. AVPA accepted the APVMA recommendations that growth promotant claims be deleted and that one 3-week course of treatment at an active ingredient dose rate of 20 ppm in feed be permitted for control of necrotic enteritis. Virginiamycin now has a registered claim for the control of necrotic enteritis in chickens. NDPSC has scheduled all levels and formulations of virginiamycin as S4.

JETACAR Implementation

Updates to the AVPA on the implementation of the JETACAR Report were provided by the publication in Dander of a presentation given at the Western Poultry Diseases Conference in Sacramento in March 2004 and by a presentation at the 5th Asia Pacific Poultry Health Conference at the Gold Coast in April 2004.

Industry Technical Committee (ITC) of APVMA

AVPA is a member of the ITC of the APVMA. Agenda items and minutes for meeting were scrutinised for issues relating to AVPA. Since there were no items of direct relevance, meetings of this committee held in Canberra were not attended during the year.

Rescheduling of Antibiotics to S4 by NDPSC

Recommendation 6 of the JETACAR Report stated that all antibiotics for use in humans and animals (including fish) should be S4. However the Government response to the JETACAR Report modified this recommendation by indicating that, if the relevant technical committees determine that an antibiotic “has a low and acceptable risk of promoting antibiotic resistance (in humans)”, then rescheduling to S4 may not be recommended. Based on these guidelines, antibiotics relevant to poultry that have been scheduled to date as S4 for all use levels and formulations include virginiamycin (except for use in horses), bacitracin, erythromycin, hygromycin, apramycin, diaveridine, neomycin and tiamulin. Antibiotics relevant to poultry that have been reviewed and the scheduling status not altered include ionophores (registered in poultry as coccidiostats), avilamycin, flavophospholipol and roxarsone, the last three being registered as growth promotants. Review of other antibiotics, such as sulfonamides, trimethoprim, tylosin and tetracyclines, will be undertaken in the near future.

Label Restraint on Veterinary Medicines for Use in Flocks that will/are Laying Egg for Human Consumption.

A list of “essential’ veterinary medicines was compiled by AEIA (now AECL) by input from poultry veterinarians servicing the egg layer industry. The Label Restraint “DO NOT USE in/on birds producing or that will produce eggs for human consumption” is progressively being applied to a number of essential medications used within the poultry industry because of the lack of an MRL for eggs. This Label Restraint effectively bans the use of these compounds in chicken egg layers and breeders, if any eggs from the breeding flock are to be used for human consumption. APVMA (Cheryl Javro) has undertaken an informal review of these “priority” veterinary medicines that has resulted in a recent report by me to AECL with specific recommendations. Products containing ethopabate, diaveridine and DOT are likely to retain the Label Restraint, due to inadequate residue data being available, as will any veterinary active ingredients not addressed in this review. Products containing these active ingredients will not be able to be used in the layer industry or in breeders in the future. Amoxycillin, trimethoprim, sulfadiazine, sulfaquinoxaline, sulfadimidine and toltrazuril may be able to be used in rearing, but this will require additional action by AECL and the APVMA. Piperazine, levamisole, chlortetracycline and amprolium will be able to be used during rearing and lay without withdrawal of eggs. Lasalocid, salinomycin and monensin will be able to be used in rearing. Dimetridazole is currently under special review by the APVMA – a decision on future registration of this active will be available soon.

General Communications on Antibiotic Matters

Contributions were made to a number of editions of Dander during the year to inform members of activities related to therapeutics including antibiotic resistance.

Tom Grimes

APVMA BANS POULTRY CHEMICALS

Tom Grimes

Convenor AVPA Subcommittee on Therapeutics

Recently the Australian Pesticides and Veterinary Medicines Authority (APVMA) has recommended that a veterinary medicine and two insecticides, commonly used for many years by the poultry industry, be banned for use by the poultry industry.

Dimetridazole

The APVMA has recommended that the registration of products containing DMZ for use in food-producing animals be discontinued on toxicological safety (suspected carcinogen) grounds, following a 2-year review. DMZ is currently the only remaining veterinary medicine registered in Australia for control and treatment of Blackhead (Histomoniasis due to *Histomonas meleagridis*) in chickens and turkeys, since Histostat (an arsenical) registration lapsed many years ago and Nifursol (a nitrofuran) was deregistered by the National Registration Authority, the fore-runner of the APVMA, in 1993. In the USA, where DMZ has also been banned in recent years for use in poultry, Histostat and 3-nitro (Roxarsone) in conjunction with dewormers that are effective against *Heterakis gallinarium* are used to assist with control and treatment of Blackhead. However in Australia, the Label Restraint "DO NOT USE in/on birds which are producing or may in the future produce eggs for human consumption" is on the label for 3-Nitro (Roxarsone)-registered products, thus excluding their use in the egg industry and, in many cases, the chicken breeder industry. The AVPA and poultry producers will need to reconsider the future control and treatment of Blackhead in the egg industry, including free-range and barn-lay flocks, the chicken breeder industry and the turkey industry.

Fenitrothion

The APVMA has recommended that the labels of products containing fenitrothion (an organophosphate) be modified to exclude use as a treatment for surfaces, structures and sheds to control pests such as mealworms and beetles on occupational health and safety (OH&S) grounds. When this recommendation is implemented, the poultry industry will have one remaining insecticide (Tugon) that is useful for spraying inside sheds following cleanout to control litter beetles (Darkling Beetle or Lesser Mealworm) which can be responsible for carryover of infectious diseases of poultry in sheds, are the intermediate host of some poultry tapeworms and which can destroy shed insulation. The likelihood of resistance occurring to the only remaining useful shed insecticide is thus increased. The AVPA and poultry producers will need to reconsider the future control of litter beetles.

Carbaryl

Carbaryl (a carbamate) was used in the past as a spray inside poultry sheds at cleanout for control of insects including litter beetles, but there have been no products containing carbaryl registered with this use pattern for some time. Recently the APVMA has recommended that one of the last useful use patterns for products containing carbaryl, as a dust in nests to control lice and mites especially red mites which can cause production losses and industrial disputes by egg collectors, be cancelled on the basis of OH&S and residue grounds. Alfacron (azamethiphos) will then be the only remaining useful insecticide that can be used for lice and mite control. The AVPA and poultry producers will need to reconsider the future control and treatment of lice and mites in the egg industry, including free-range and barn-lay flocks, and the chicken breeder industry.

Annual Report of AVPA Exotic Diseases and Importation Subcommittee 2003-2004

Subcommittee Members: Kim Critchley, Peter Groves, Clive Jackson, Margaret Mackenzie, Peter Scott, Ben Wells, George Arzey (Convenor)

The committee considered 2 issues:

1. Proposal by Biosecurity Australia to consider shortening the Post Arrival Quarantine period from 12 weeks to 9 weeks in order to enable the quarantine facility to accommodate an extra batch of hatching eggs per 2 years (ABPM 2004/02.

2. Review of ABPM 2004/03 Development of import policy for Specific Pathogen Free (SPF) Eggs.

The full texts of the responses by the committee are published in this edition of Dander.

Most members have been on this committee since its inception. We have strived to respond to issues on time and to the best of our technical ability. Our responses represent technical consensus among the committee whenever this is possible. Some committee members from time to time may have an obvious conflict of interest. In such cases the committee strives to reach consensus among the remaining members. Once a consensus is reached on the technical merit of issues before the committee, considering the time frame for submissions to Biosecurity Australia or other organisations, it is not practical to undergo another round of consultation between members unless a very significant technical aspect requires re-consideration.

Members of the committee are busy in their own professional sphere and a proper response usually entails examination of lengthy documents and in some cases seeking further information from the scientific literature. This is time consuming and requires a fair degree of dedication and commitment. I would like to take this opportunity to thank members of the committee for their support and dedication over many years.

It is proposed that provided the time frame for future submissions to Biosecurity Australia or other organisations permits, views of the entire membership of the AVPA could be canvassed by the committee. This may entail, where possible, the AVPA secretary e-mailing the proposals for importation protocols or other issues to AVPA members with a request for members to e-mail their views to the convenor. The committee will consider views of all members but the final document might not be circulated to members before submission.

George Arzey

AVPA Sub-Committee on Exotic Diseases and Importation

Proposal to Reduce the PAQ Period for Imported Hatching Eggs from 12 to 9 Weeks (ANIMAL BIOSECURITY POLICY MEMORANDUM 2004/02)

Summary

The subcommittee membership includes members with declared interests in the proposed changes to the PAQ. These members' views *were* canvassed and considered. However, the final outcome is based on general consensus among remaining contributing members.

The AVPA Subcommittee on Exotic Diseases and Importation considers that the changes proposed would increase the risk of failing to detect pathogens of concern. The risk increment may still be in the accepted range to some interested parties. In ABPM 2004/03, Biosecurity Australia considered some risk elements in the importation of SPF eggs to be high and this in a protocol with more stringent testing than the PAQ proposed protocol. When some of the risk elements are considered in the context of this proposal, the conclusion would have to be that there is a net increase in risk associated with the changes proposed in ABPM 2004/02.

The AVPA committee considers that in order to mitigate the risk to a significant degree, the new procedure should require viral isolation testing to be done at 6 weeks as proposed but serological testing for both viral and bacterial pathogens (that normally should not require 3 weeks), be pushed as close as practically possible to the 9 week mark (but not less than 8 weeks of age) in order to increase the chances of detection. For tests of low sensitivity (eg TRT) the AVPA committee recommends that other more sensitive tests be introduced or the tests be carried out twice, at 6 weeks of age and at approximately 9 weeks.

If this is not possible the status quo should be maintained.

The Subcommittee makes the following comments on the various diseases:

Infectious Bursal Disease (IBD)

Although presence of the virus in cloacal swabs was evident in laboratory trials *for* 23 days after inoculation in larger populations the dynamics of cloacal shedding could expand beyond 2-3 days. The possibility that the external shell may be contaminated would be mitigated by appropriate disinfection, however, no scientific data is provided to support Virkon S as an acceptable alternative to Formalin fumigation.

This is an essential aspect of the risk mitigation and scientifically validated data on a range of disinfectants like Gluteraldehyde, Formalin as well as Virkon S is required.

No details are provided on the contact time and the method of administration of Virkon S. It is not clear how and why Virkon is an acceptable alternative. The fact that it has been used against a range of poultry pathogens like ND and AI does not necessarily provides proof of efficacy of its actions against these pathogens or against IBD.

Avian Influenza

The origin of AIV outbreaks in Australia is stated to be from wild water birds.

The following may not be pertinent to risk consideration in the proposal however, for the sake of scientific accuracy a perusal of the paper by Selleck, Arzey, Kirkland, Reece, Gould, Daniels and Westbury in Avian Diseases 2003 Vol 47 should provide an expanding insight into other possibilities associated with the Tamworth outbreak. Examination of other AI outbreaks in Australia may also provide a scope for other alternatives.

As specified in the SPF review protocol, the possibility of LP AI spreading slowly is an element of risk that must be considered. Serological tests at 6 weeks of age could detect (depending on sensitivity) some evidence of AI presence. However, serological testing about the 9-week mark would further mitigate the risk.

Newcastle Disease

The AVPA Committee considers that detection of lentogenic NDV in vaccinated flocks by serology during the PEQ at 21 days before egg collection or 14-21 days post egg collection (as per current and proposed protocol), might not show up as a peak or a change in the serological profile of a vaccinated flock.

Presence of virulent ND virus in embryos and progeny from vaccinated flocks was reported by Capua et al (J Vet Med B 40 609-612). The two passages required for isolation in this case probably indicates extremely low titres of virus in the embryos. Thus, it may take some time for clinical disease or serological evidence to occur. The above paper reported that at **60** days of age a relatively high % of progeny were still negative to NDV HI antibodies and this (as well as the reported AAHL work) suggests that egg transmission is epidemiologically significant. It also brings into question the ability to rely on serological tests at 42 days of age (6 weeks of age) as a reliable tool to detect infection in cases where maternal antibody level is high and the virus is not extremely virulent. Clinical signs might not be experienced particularly with lentogenic or mesogenic strains of NDV.

These views are reflected in the SPF document discussion under 'risk management'. However they are not reflected in the PAQ risk assessment proposal.

The following conclusions should address the risk as reflected in the SPF document for review (ABPM 2004/03).

1. Controlling the external contamination of the eggs would not address the risk associated with internal egg infection. Presence of maternal antibodies in the eggs may minimise and delay the spread of any vertically transmitted virus and might not be readily diagnosed as postulated in the hatching eggs (PAQ) proposal by 42 days of age.

2. The proposed changes in the hatching egg protocol might result in a net increase in risk of failing to detect infection during the PAQ period.

Similar concerns should prevail for other Avian Paramyxovirus under these circumstances.

Turkey Rhinotracheitis (TRT)

This agent in the SPF protocol for review is considered of high risk based on "possible presence in the reproductive tract, the severity of the disease, low sensitivity of the ELISA test and the potential national impact". Although the ABPM 2004/2 document has a significantly lower ramifications in the case of fertile eggs for hatching of breeders, the 3 other criteria are applicable to the PAQ review and overall indicate higher risk of failure to detect infection.

In the conclusion under TRT in the PAQ document it is considered that serological tests would provide sufficient additional confidence that APV is not present. However, the proposal on changes to importation of SPF eggs mentions low sensitivity of the routine ELISA test (52%). Therefore 3 of the 4 criteria that constitute the high risk for TRT under the SPF proposal are applicable to the P AQ proposed changes.

Salmonella

The conclusions under all Salmonella spp of concern highlighted the fact that testing is currently conducted in the first 10 days and therefore the changes would not affect the risk. This is correct for the bacteriological testing but currently the serological test is done at 9 weeks of age. Therefore this aspect will be affected by the proposed change to testing at 6 weeks of age. The proposal by the AVPA Subcommittee to delay the serological testing to a date as close as possible to the 9 week mark applies also to this group of organisms.

George Arzey Convenor

AVPA Sub-Committee on Exotic Diseases and Importation
ABPM 2004/3 -Development of Import Policy for Specific Pathogen Free (SPF) Eggs

The AVPA Committee on Exotic Disease and Importation supports the recommendations in the above Policy Memorandum with the exception of Recommendation 4.

The AVPA committee does not support the removal of the contingency clause after 12 months. The degree of risk associated with the importation of SPF eggs to be used for avian vaccines as evident from repeated disease breakdowns and vaccine contamination is of such magnitude that the only justification for their importation is a critical national need. This must be the guiding principle regardless of any improvements in diagnostic technology. Human errors are an integral part of any diagnostic technology no matter its sensitivity or specificity.

The AVPA Committee also wishes to highlight the potential long-term ramifications to continuity of local SPF eggs supply once the contingency clause is removed. Although this is a commercial issue it also has technical

ramifications since the potential impact may result in a lack of choice and the necessity to rely only on imported SPF eggs regardless of any technical concerns.

The Subcommittee makes the following comments on the various disease issues:

Newcastle Disease

In addition to the recent studies by AAHL that demonstrated the presence of virulent virus in the egg, the paper by Capua et al (1993) J Vet Med B 40:609-612, reported the isolation of virulent virus from commercial embryonated chicken eggs.

The view that this mode is epidemiologically unimportant are based on the assumption that egg production will cease and embryos will die.

This is not the case when flocks are vaccinated or when a low pathogenicity strain of NDV is involved.

Routine HI testing is not capable of detecting PMV5. This has not been historically associated with poultry but nevertheless there is no data to suggest that it can't infect poultry.

The ND disease status of the country of origin is of little relevance for ND viruses circulating within a country that is recognised Newcastle Disease-free. (See point g page 12 attachment B). Testing 100% of the source flock of SPF eggs within the previous 12 months is unlikely to provide assurance of freedom from recent mesogenic or lentogenic strains infection. Dot point E (3) page 16 of appendix B also links additional testing for other pathogens to recognition of disease freedom in the country of origin. The delineation between disease freedom and freedom from infection must be recognised in the context of risk from SPF eggs. SPF eggs also carry the risk of infection by non-pathogenic or low pathogenic organisms that are not present in Australia.

PMV 2 and 3

No detection methods are listed.

IBDV

The premise that "most hens of laying age would be immune or resistant to infection with IBDV" is of little relevance since these birds are SPF and supposed to be naive. If infection occurred in SPF flocks, it is likely that shedding would occur.

Leucosis J

The agent is not part of the European Pharmacopoeia requirements for testing. However, evidence is emerging of its wide distribution in breeding stock in some countries. In Australia concerted efforts are in place to detect and eliminate the above from the scene at an early stage. The presence of Leucosis J virus in SPF eggs used for the production of Australian vaccines has the capacity to undermine the Leucosis J status of Australian poultry on a large scale in a short time.

The AVPA Subcommittee therefore recommends that considerations be given to the ability to effectively detect the above virus and the need to recognise the risk associated with this disease in the context of the SPF policy.

Generally

The recommended testing of 5% every month appears sound if infection spread rapidly. A 30 day "window of opportunity" for new infection exists between each test. During this time infection could occur and SPF eggs could be contaminated. The additional testing as per 5a within 21 days pre egg collection and the testing of the final live vaccine on chickens provide further mitigation.

The degree of mitigation would depend on the sensitivity of the test and human errors.

These are some of the crucial elements.

The Committee supports Recommendations 1, 2, 3, 5, 6, 7, 8, and 9.

The Executive Summary of the document recommends that the use of SPF eggs of non-Australian origin in live avian vaccines is considered a high quarantine risk and therefore their use be contingent on demonstration of critical national need.

Recommendation 4 seems to abandon the need for demonstration of critical need after an initial period of 12 months.

The AVPA committee does not support the removal of the contingency clause after 12 months. The degree of risk associated with the importation of SPF eggs to be used for avian vaccines as evident from repeated disease breakdowns and vaccine contamination is of such magnitude that the only justification for their importation is a critical national need. This must be the guiding principle regardless of any improvements in diagnostic technology. Human errors are an integral part of any diagnostic technology no matter its sensitivity or specificity.

George Arzey Convenor

WVPA Matters

http://www.wvpa.net/index.html

Future Congresses

XIV Congress of the World Veterinary Poultry Association August 22-26, 2005 in Istanbul/Turkey www.wvpc2005.org. For information about WVPA travel scholarships visit the WVPA website <http://www.wvpa.net/index.html>

XV Congress of the World Veterinary Poultry Association September 13-16, 2007 in Beijing, P. R. China

Do we want to bid for the 2009 WVPA Conference?

Bidding proceedure for hosting a WVPA Congress

The bidding procedure for hosting a WVPA Congress was adopted by the WVPA Bureau at its meeting in Budapest in 1997 and includes the following:

1. Any national branch that has a representative on the Bureau may bid to host a congress.

2. Bidding countries shall inform the Secretary/Treasurer of WVPA of their intention to bid at least two months before the relevant Bureau meeting.

3. Expenses of presenting a bid shall be borne by the bidding country.

For further details see the website <http://www.wvpa.net/fs_wvpa_congress.html>

Avian Influenza

Below is the full text of correspondence from George Arzey published in the June 2004 edition of the Australian Veterinary Journal (*Australian Veterinary Journal* (2004) **82**, (6) 36-37). It is reproduced, with permission, for the interest of AVPA members.

The role of wild aquatic birds in the epidemiology of avian influenza in Australia

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The report by Peroulis and O'Riley[1] of finding avian influenzavirus (AIV) only of the H3 haemagglutinin subtype highlighted a perplexing aspect of the epidemiology of avian influenza (AI) in Australia in that H7 subtype AIV, the cause of all five AI outbreaks in domestic poultry in Australia, has not been isolated from wild aquatic birds.

A variety of haemagglutinin subtypes of AIV have been recorded infecting wild aquatic birds in the Eastern States. The subtypes have included H5, H6, H11 (Qld),[2] H1, H3, H4, in Victoria [1,2] and H3 in New South Wales (C Morrow 1996 unpublished). In Western Australia, H1, H3, H4, H6, H12 and an atypical H7, [2] later characterised as a distinct new subtype H15,[3] have been recorded in wild aquatic birds. Similarly, the H7 subtype has not been detected in wild aquatic birds in New Zealand in the course of three surveys in 1989, 1990 and 1997.[4]

Internationally, the main AIV reservoirs are recognised to be birds of the Orders Anseriformes and Charadriiformes. H3, H4 and H6 subtype AIV are often isolated from ducks in the USA, Europe and Australia.[5] Most Australian Anseriformes remain local or migrate within the Australian continent. On the other hand, many Charadriiformes (sandpipers, turnstones, surfbirds, gulls and terns among others) undertake long migrations[5] with breeding grounds in Siberia, Alaska and elsewhere in the Northern Hemisphere.

Although it is recognised that H5 and H7 AIV subtypes are under-represented in isolations from waterfowl compared with other AIV subtypes,[6] they have nevertheless been demonstrated in wild aquatic birds in surveys conducted in countries where poultry have experienced AI outbreaks involving H7 or H5 subtypes. Whereas the investigations overseas may have been more intense, Australian investigations have isolated a range of AIV subtypes including H5 but not H7 subtype. The dynamics of aquatic bird populations may perhaps explain differences in AIV subtypes found in different years but not the consistent inability to find H7 AIV in wild aquatic birds either in Australia or New Zealand.

For wild aquatic birds to be the source of AIV for outbreaks in poultry in Australia, AIV subtype H7, must be present in wild aquatic birds either as low or high pathogenicity virus. The absence of H7 AIV of either low or high pathogenicity in wild aquatic birds in Australia before, during or after the five AI outbreaks between 1976 and 1997 is difficult to explain given the occurrence of other low pathogenicity AIV subtypes in wild aquatic birds in Australia. There is also no record of AIV subtypes other than H7 ever occurring in Australian commercial chickens despite exposure of commercial chickens to wild birds, dam and river water over many years. By comparison, in 16 USA States between 1992 and 1996, in any given year, an average of four different AIV subtypes were detected in commercial poultry in different States.[6] The four AIV subtypes were also isolated from wild birds.[5] In Italy between 1997 and 2003 when outbreaks of AI due to H5 and H7 subtypes occurred in commercial poultry, the two subtypes were also isolated earlier from wild aquatic birds.[7]

An examination of the rationale on which wild aquatic birds have been implicated as the source of the AI outbreaks in Australia reflects a pattern of presumption of involvement and downplaying the significance of other potential sources rather than sound epidemiological evidence.

A high nucleotide sequence homology (95.3%) was found between the Vic 85 and Vic 76 AIV indicating that both were derived from a common recent ancestor AIV.[8] It is significant that H7 has not been isolated in wild aquatic birds in Victoria despite the fact that a common ancestor virus caused two AI outbreaks at two locations about 180 kilometres and 9 years apart. The H7 subtypes isolated from the 1985, 1992 and 1994 AI outbreaks in Australia were all

phylogenetically different from H7 subtypes found in North America, Europe and Africa. There were similarities with the Eurasian group of H7 AIV but the Australian H7 subtype AIV formed a separate sublineage, all being remarkably similar.[9] If migratory wild birds were involved in the introduction of H7 subtype into Australia between 1985 and 1994, the delineation of the Australian AIV from the North American or Eurasian AIV would not be likely to persist and this is not consistent with migratory wild birds being involved as an epidemiological source in these outbreaks.

The epidemiological data on outbreaks of AI in Australia implicates either commercial domestic ducks or emus in two and possibly three of the five AI outbreaks.[10,11] The involvement of wild aquatic birds in the remaining Australian outbreaks is based entirely on circumstantial evidence of the presence of wild aquatic birds in the vicinity of infected farms or their reported presence on large bodies of water that supplied the poultry with drinking water. The outbreak virus serotype has not been demonstrated in these aquatic birds or environmental samples.

On the basis of overseas evidence, it would be unwise to dismiss the theory that wild aquatic birds are the reservoir of AIV infection. However, the epidemiological data accumulated in Australia are inconsistent with wild aquatic birds being the source of the AI outbreaks for the following reasons:

The Charadriiformes are the long-range migratory birds in Australia with breeding grounds in the northern hemisphere and H7 subtype AIV has not been detected in birds belonging to this Order either in Australia or New-Zealand.

The H7 subtype AI viruses from the Australian outbreaks are phylogenetically delineated from the Northern Hemisphere H7 subtypes where the long range migratory birds breed.

Recurrent infection with the same AIV subtype has been regarded as being more indicative of an endemic source rather than introduction by migratory aquatic birds.[12]

In the most significant world reservoir of AIV, wild aquatic birds of the Order Anseriformes, infection with the H7 subtype has not been demonstrated in Australia and the prevalent AIV subtypes in wild aquatic birds in Australia have not been detected in commercial or domestic chickens.

All five outbreaks of AI in Australia have occurred in intensively housed poultry whereas overseas outbreaks were reported as more likely to occur in birds in husbandry systems that allow contact with aquatic wild birds.

Live bird markets have been reported to play a significant role as a source of dissemination of AI infection in overseas outbreaks. Ratites, pheasants, turkeys and quails (as well as humans and other species) may be involved in the crucial step of introduction of AIV to chickens. Some of these avian species are capable of forming a reservoir of AIV. No widespread surveys of bird markets, emus, domestic ducks, quails or turkeys have been undertaken in Australia to clarify their AIV status and their possible role in the epidemiology of AIV.

The potential role of wild aquatic birds as a reservoir of AIV is not disputed but the epidemiological role that they have played in the introduction of H7 subtype to Australia and infection of poultry flocks in Australia remains questionable. Preventing wild birds direct or indirect access to domestic poultry is a necessary practice but knowing 'who' are the endemic reservoir species and when and where infection occurs is important in mitigating the risk to domestic poultry.

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