



**RSPCA AUSTRALIA SCIENTIFIC SEMINAR 2009**  
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## **SPEAKER ABSTRACTS**

### **Humans and animals: something of a therapeutic team**

*Dr David Hardman, Clinical Associate Professor, ANU Medical School*

Progress, and thus the practice, of medicine and surgery have involved the repeated harvesting of the bounties of Mother Nature. Animals are an important source of materials used by humans in the care of humans. These materials include drugs, such as anticoagulants, antibiotics, anaesthetist agents, and hormones. Many wound healing techniques depend on a direct interaction between humans and animals, through the agency of leeches, maggots, and bees. The animal kingdom provides a range of materials that are used in the operating theatre, including heart valves, blood vessels, and tissues used for repair of various defects.

The use of animal products in medical and surgical care is an evolving process. As the use of one animal product passes into history, such as the use of porcine Insulin to treat diabetes, the demands on that animal may change. Doctors and their patients no longer want porcine insulin, but they have become very interested in pig liver and pancreas xenotransplantation.

There are ethical issues to be considered in the use of animal products in the medical setting. Within the miasma of the ethical debate the views of the healthy animals (as reflected by their human advocates) need to be balanced by the views of the dying patients (as reflected by their loved ones and doctors). As in all axiomatic argument, there is no resolution but plenty of anger and anguish.

### **Engineered animals in the armatarium? Ethical issues in the use of cloned, chimeric and transgenic animals in medical therapies**

*Dr Rob Sparrow, Senior Lecturer, School of Philosophy and Bioethics, Monash University*

Our rapidly improving understanding of the biology of stem cells and the development of increasingly efficient technologies for genetic modification have opened up the possibility of creating new breeds of non-human animals engineered for use in medical therapies. Scientists have now made a number of different transgenic animals designed to produce valuable pharmaceuticals in their milk, eggs, or semen—a practice that has become known as “pharming”. After a brief hiatus, due to concerns about the possibility of xenozoonosis, there is renewed interest in xenotransplantation, with several research groups working on the creation of genetically modified pigs, engineered so that their organs will not be rejected by the human immune system. It is also possible that in the future, chimeric animals, consisting of known admixtures of human and animal tissue will serve as sources of tissues for transplant and other therapies.

This presentation will survey the implications of these technologies for animal welfare and briefly outline the ethical issues they raise. How sanguine we feel about these new technologies is likely to depend in part upon our assessment of the extent to which they are fundamentally continuous with existing and historical technologies of modification through breeding—a matter which is properly controversial. It will also depend upon whether we include the process of research and development of engineered animals in our assessment of their implications for animal welfare. Once new breeds of engineered animals are established, the commercial value of these animals is likely to ensure that their welfare will be a higher priority than the welfare of animals currently bred for human consumption or ordinary animals used in existing medical therapies. However, the development and use of more powerful technologies for engineering animals makes it all the more important that we consider ethical and welfare issues at the “design” stage. We might also wonder what, if any, limits there should be on the creation of sentient creatures for human ends.

## **Companion animals and mental health: The benefits of companion animals for human psychological wellbeing**

*Maggie O’Haire, Fulbright postgraduate scholar, University of Queensland*

Human association with companion animals is not new. Fossil evidence indicates that a special relationship between humans and animals has existed for at least half a million years. Today, this relationship remains strong with 63% of Australian households owning domesticated pets. People spend enormous amounts of time, energy and money on their companion animals for seemingly nothing of utilitarian value in return. A review of the literature, however, reveals that companion animals actually do give a great deal in return, in that they can remarkably enhance human physical health and psychological wellbeing, and can in some cases be the difference between life and death.

Various theories attempt to explain these benefits, yet no unified, empirically supported theoretical framework has been identified. Two of the most commonly cited theories include the biophilia hypothesis and social support theory. The biophilia hypothesis denotes the innate propensity of humans to attend to and be relaxed by the sight of other living things. For example, the simple act of watching fish in a tank can reduce stress and anxiety. In contrast, social support theory focuses on the ability of companion animals to provide social support to their owners and to facilitate social interactions between their owners and other humans. The social support of animals can be particularly important for the elderly, whose dwindling support networks often lead to psychological deterioration.

Due to the benefits of companion animal ownership, many practitioners have gone a step further to use these benefits in helping targeted populations. This process has been termed animal-assisted interventions, which includes any intervention that intentionally incorporates animals as a part of the process. Research in this area is still in its infancy, yet positive results have been documented for a number of populations, some of which include Alzheimer’s Disorder patients, children with Attention Deficit Hyperactivity Disorder and Conduct Disorder, and individuals affected by Autism Spectrum Disorder.

Yet despite the great strides that have been made in the field of human-animal interactions, companion animals and their owners face many struggles. Challenges include a shift towards rental housing that prevents pet ownership in the home, restrictions against animals in community spaces such as hospitals and nursing homes, and increasingly urban lifestyles that prevent contact with nature and wildlife. Stress-related disorders are at an all time high, while pet ownership and interaction with nature and living creatures are rapidly on the decline. Research indicates that one of the most important determinants of human health

and wellbeing may be the relationship we cultivate with the animals with whom we share our homes and our planet. Our future depends on this relationship, and our duty will be to work together to study and maximize its potential through interdisciplinary, collaborative research.

## **Companion animals and human health: The view from four paws**

*Mia Cobb, Training Kennels & Vet Clinic Manager, Guide Dogs Victoria*

The welfare of therapy, assistance and even companion animals is important but tends to be overlooked because welfare issues in other animal sectors are so pressing. However, animals are not always guaranteed a good quality of life just because they play meaningful roles in the lives of people. The relatively new area of service animals and animal-assisted therapy is a unique field of animal utilisation that may give rise to ethical and welfare concerns. General considerations related to sourcing, training and housing suitable animals for these programs suggest there is room for improved provision of animal welfare.

There is a heavy bias in research to date focussing on the human welfare side of these programs, with minimal focus on assessing the effects on animals. This paper will review implications for the welfare of animals used in this sector. It will also include suggestions for improving programs so as to enhance the mutual benefits for both humans and animals. The need for representatives from various fields to collaborate to ensure a coordinated approach to development and funding of research, in conjunction with translation of results into practical outcomes for industry development is a clear priority.

## **Animal hoarding: A multi-disciplinary approach**

*John Snyder, Vice President, Companion Animals, The Humane Society of the United States*

### DEFINITION

Animal hoarding is generally defined by the following conditions. A hoarder:

- Accumulates a more than typical number of animals
- Fails to provide appropriate nutrition, sanitation, and veterinary care for the animals
- Fails to notice/respond to the deteriorating condition of the animals, including disease and death
- Is in denial about the extent of the situation
- Often neglects his or her own health and well-being

### THE HOARDERS

The most common animal hoarders are middle-aged or elderly females, often single, reclusive, disabled, and/or unemployed. However, hoarders can be male or female, of all ages, and from different backgrounds. Some are people who function normally but become overwhelmed by the animals they accumulate. Many also suffer from psychological disorders.

### MULTI-DISCIPLINARY APPROACH

The best way to prevent and respond to animal hoarding is a community-based, multi-disciplinary approach. The following groups should coordinate to maximize their effectiveness:

- Animal care and control agencies
- Adult protective services
- Social workers
- Mental health professionals
- Veterinarians

- Code enforcement personnel
- Fire department officials
- Board of health officials

#### OUTREACH AND EDUCATION

Outreach and education efforts are critical and should target:

- *The public*: Explain the psychological element of hoarding, debunking the image of “the nice cat lady who loves animals.”
- *Prosecutors and judges*: Ensure that they’re provided with a broad picture of hoarding before specific cases come up.
- *The media*: Clarify the depth and complexity of the problem, and encourage them to cover the issue.
- *Utility employees, mail carriers, cable TV employees*: Provide these professionals with information about the issue. As they travel through neighbourhoods, they may help with early detection.

#### INTERVENTION OR PROSECUTION

All hoarding situations require intervention, but whether criminal prosecution is necessary depends on the hoarder and the situation. Many times the situation is not serious enough for prosecution and an agency must attempt to establish a relationship with the hoarder. Without such support, the recidivism rate of hoarders is near 100 percent.

- Successful intervention may involve the following:
  - Removing the animals from the home
  - Providing medical care and sterilization for animals who can be returned to the hoarder
  - Monitoring the hoarder to prevent relapses
  - Providing mental health and/or adult protection services.
- Other times, criminal prosecution is the best approach, but keep in mind that seizure of a large number of animals can place a huge burden on animal control and must be planned well in advance.
  - A hoarder can be charged with animal cruelty and neglect.
  - Jail time, fines, and probation are appropriate goals, but ultimately it is best to prohibit the hoarder from owning animals again.

#### DIFFERENT LEGISLATIVE APPROACHES

More and more communities are considering legislation that provides financial relief to the agencies that take on the long term housing of seized animals, a common problem during legal intervention and court processes. Forfeiture and disposition laws give agencies authority to take control of the affected animals and provide courts with the authority to determine the disposition of those animals.

## Changing diseases in a changing world: Threats to public health and animal welfare

*Dr Ashwin Swaminathan, Infectious Disease Physician, The Canberra Hospital*

Between 1998 and 1999, there was a major outbreak of a severe febrile disease amongst pigs and humans in peninsular Malaysia, culminating in the deaths of 105 people. Approximately 1.1 million pigs were culled in an effort to control the outbreak. Investigations revealed a hitherto unknown pathogen - Nipah virus, whose natural host appeared to be certain species

of fruit bat. Clearance of forests for pig-farming likely led to increasing proximity between pigs and bats, and eventual transmission of virus.

Concerns regarding “Emerging infectious diseases” - that is, those infections that have recently increased in geographic range or incidence, recently been discovered or are caused by newly evolved pathogens - is growing in scientific and popular circles. Seventy-five percent of pathogens causing emerging infectious diseases are thought to be zoonotic in origin, with wildlife being an increasingly important source. The story of Nipah virus serves well to highlight many important points pertaining to contributing factors to, and consequences of, emerging infectious diseases affecting human and animal populations.

The emergence of infectious diseases is multi-factorial. Urban sprawl and expansive use of land resources alters the natural habitat of wildlife and brings human and animal populations closer together. Additionally, globalisation of travel and trade can magnify the spread of pathogens and disease. Though the potential consequences of emerging infectious diseases on human populations have taken centre stage (e.g. note the frenetic responses to avian influenza and SARS), the impact on animal populations and welfare should not be underestimated. Mass culling of animals to control disease outbreaks and introduction of new pathogens into wildlife or domesticated animal populations (potentially affecting species conservation and biodiversity) illustrate how animal welfare can be adversely affected.

## **Animal welfare considerations in response to an emergency animal disease**

*Richard Rubira, Principal Veterinary Officer, Office of the Chief Veterinary Officer, Department of Agriculture, Fisheries and Forestry*

Although disease control and eradication is the major objective in any emergency animal disease (EAD) response, the maintenance of acceptable animal welfare outcomes must be an integral part of that goal. In the event of an EAD outbreak, animal welfare can be put at risk by restrictions on the movement of animals, which in turn can lead to overcrowding, difficulties in obtaining feed and the implementation of the humane destruction of diseased or in-contact animals. Australia has a well developed plan (AUSVETPLAN) for responding to an emergency animal disease, and the management of animals to ensure the optimisation of their welfare is an important component of that plan.

## **Intensive farming and human health**

*Dr Peter Collignon, Director, Microbiology, The Canberra Hospital*

Wherever antibiotics are used, an inevitable consequence of their use is the development and spread of resistance bacteria (both in people and animals). When food animals carry resistant bacteria, food produced from these animals will often be colonised with resistant bacteria. After ingesting these foods, people can then carry (and in some cases develop infections) with these resistant bacteria.

Some of this resistance is to antibiotics that are “last line” or “critically important” and are needed to treat life-threatening infections in people. The development and spread of these multi-resistant resistant bacteria follows the use of “critically important” (or similar) antibiotics in food production animals. Examples include resistance to fluoroquinolones (ciprofloxacin) and 3rd and 4th generation cephalosporins in many bacteria that includes *Salmonella* spp, *Campylobacter* spp. and *E. coli*. Vancomycin resistant strains of enterococcus (VRE) have also resulted from the use of glycopeptides in animals.

Major improvements in antibiotic use can be made without compromising animal welfare or food production. In Denmark, pig and poultry producers voluntarily ceased the routine use of in-feed antibiotic for growth promotion and prophylaxis purposes in 1998. Poultry production was unaffected, other than a 1% increase in feed intake (no effects on weight gain and a small improvement in mortality rates were seen). In finisher pigs there were also no detrimental effects. In weaner pigs there was a small 0.5% increase in mortality and a small decrease in daily weight gain. However these issues may have had explanations other than the withdrawal of routine antibiotic use and can be addressed by other interventions. There were no detrimental effects on overall pork production or exports, which both continued to rise.

If three basic principles of antibiotic use were adopted in the agriculture sector, most of the driving factors for unnecessary antibiotic resistance would be substantially reduced or eliminated. This can be done without compromising the therapy of sick animals or the economic production of food animals. These principles are;

1. Antibiotics that are “critically important” or “last-line” antibiotics for serious human infections should not be used in food production animals or agriculture.
2. The use of antibiotics for prophylactic purposes in animals should be kept to a minimum. The use of methods (other than antibiotics) to prevent infections should be expanded and developed.
3. Antibiotics should not be used as growth promoters.