ANU Animal Care Emergency Procedures

Introduction

Animal care emergencies may occur in a variety of situations and involve a variety of species. Animal care emergency procedures fall into two principle categories:
1) Emergency procedures involving individuals or groups of animals in biomedical or wildlife research
2) Wide scale emergency procedures associated with natural disasters

1) Emergency Procedures re Individuals or Groups of Animals

Emergency Procedures re Animals in Biomedical Research

Directly related to animal numbers, emergency animal care situations are likely to more frequently involve rodents. Also in the biomedical research situation may be involved rabbits, amphibians, cats, chickens and fish. These may involve individuals or a group of animals and the cause may be disease, traumatic injury, unintended deprivation, such as occurs with water bottle sipper blockage, traumatic injury or relate from untoward and not predicted effect of experimental procedures. Concerning rodents, to minimise murine diseases it is essential that the principles of the document, “Integrated Plan for Technical Risk Management of ANU Rodent Research” are applied in all rodent facilities within the University.

Invariably animals in a biomedical research emergency situation will initially be found by an animal technician. If an animal is found in a state of ill-health, injured, or suffering unintended not predicted effects of experimental procedures the following should occur:

1) Ascertain if situation can be readily rectified and do so as soon as possible.
2) If the situation is a borderline one ensure that regular ongoing monitoring occurs.
3) If not able to readily address the situation seek immediate advice from veterinarian, animal house manager, or senior technician.
4) If a representative of the research group is readily available inform them of the situation. Note that the advice of veterinarians/experienced animal professionals takes precedence over research group representatives re the emergency treatment of an animal, unless there is a clearly defined research reason for the situation and this can be readily reversed using that knowledge.
5) If you are unable to contact more senior personnel use your judgement and if the situation is critical, euthanize the animal using an institutionally approved method for that species.
6) Complete the relevant facility form and enter in the facility animal recording database.
7) Ensure that the experimental group is informed of the situation and outcome.
8) If there is any suggestion that this may involve a Code non-compliance issue, the Executive Officer of the Animal experimentation Ethics Committee must be notified and details are available on the AEEC website.

Emergency Procedures re Animals Involved in Field Wildlife Research

In the usual field wildlife research situation it is usually not logistically possible to contact a veterinarian. However in assessing wildlife proposals the AEEC assesses the experience of the investigator with that particular species and that includes knowledge of and experience with acceptable euthanasia practices. In an emergency situation involving field wildlife research the ultimate outcome lies with the primary investigator and the obligation that animal welfare is paramount.

2) Natural Disaster Emergency Procedures

There is need to assess risk levels, preparedness and contingency plans in the event of natural disasters, and infectious diseases that may affect facility staff levels. An outcome of natural disasters involving one animal facility is the possible relocation of animals to another facility. In conjunction with this it is essential that the principles of the Integrated Plan for Technical Risk Management of ANU Rodent Research, primarily involving control of microbiological and genetic quality of ANU rodent colonies, are adhered to across campus.

Fire

The construction materials of ANU animal houses makes it unlikely that general fire would occur in one of these buildings. The bigger risk comes from smoke inhalation. In the 2003 Canberra bushfires ANU didn’t lose any animals. Sensitive rodent studies were principally protected by building air filtration systems and
individual cage filtration. Many of the facility filters had to be replaced immediately after the fires due to clogging with particulate matter, but animals were protected.

Were fire to effect individual facilities and all, or a portion of the animals housed there-in to be saved, emergency accommodation would of necessity involve another ANU animal facility and this puts emphasis on all facilities having compatible animal health surveillance programs and similar standards of disease control. Decisions re relocation of animals would be the subject of emergency meetings. Should animals suffer burns, assessment needs to be made by a veterinarian re treatment or euthanasia.

Flood

Given the control of lake water it is unlikely that ANU would experience wholesale flooding. However minor flooding of ANU facilities has occurred due to inadequate building maintenance and drainage and it essential to urge that maintenance and drainage standards are maintained. Such flooding has a capacity to introduce animal disease and this has been experienced in the past. Modern caging reduces this risk as does the construction of new buildings, however it is essential that building maintenance includes regular animal facility inspection of gutters and storm water clearance.

Earthquake

Earthquake has the potential to completely destroy facilities, and also completely invalidate the barriers that are setup to protect animals from pathogens eg in an SPF rodent unit. Caging such as IVC’s will afford some measure of protection, dependent on the degree of building damage. In the literature relevant to earthquake damage and animal facilities, reference is made to the fact that for colonies to survive, it is essential that alternative facilities be available. Transfer of animals to other universities' facilities following Californian earthquakes occurred successfully, but this depends on other facilities being available, and those facilities being of a comparable health status. The ANU stands alone in the ACT in terms of animal and facility numbers and there would not be other institutional facilities available. Any movement of animals would therefore be within the ANU, and this is possible, depending upon available space and equivalent animal health surveillance/monitoring standards. However it is very possible that the damage sustained to all ANU animal facilities might be similar, and if so this would obviously negate the possibilities of animal transfer.

Human Pandemic Disease using Avian Influenza as an example

Discussion has occurred world wide on the possibilities of a human flu pandemic, particularly one with Avian Influenza as the causal agent. This may have a considerable effect that such a pandemic would have on our ability to maintain experimental animal colonies, labour intensive as they are. Consideration also needs to be given to the effects that Avian Influenza including human adapted strains (eg H 51N1 VN/1203/04) of Avian Influenza might have on the health of our experimental animals. Human adapted strains are mentioned in the scientific literature as causing significant mortality in laboratory mice.

The percentage of the human population affected, the percentage morbidity, the percentage mortality, the average period of technician inability to work, and the subsequent effect on maintaining laboratory animal facilities, will all depend on the strain of virus involved, the speed at which preventative medicine programs might be implemented, and the percentage of the population protected by an effective vaccine.

Concerns are:
- The immediate care of animals
- Actions to be taken if insufficient care is able to be provided
- A contingency plan to ensure that unique genetically defined animals are maintained for future research

Re the immediate care of animals decisions will be needed concerning:
- Materials and equipment that would allow a less regular animal maintenance, and still meet the terms of the Code
- Recruitment of the aid of academic research personnel to assist the maintenance procedure

Emergency provisions must ensure animals have sufficient food, water and bedding, and bedding needs to be changed with timing to take into account accumulation of faeces and urine. Special bedding and IVC’s facilitate this. IVC’s (Individually Ventilated Cages) are in use in the ANU Bioscience operation and are scheduled to be included in the new College of Science Animal House. Food and water levels would need to be topped up on a regular basis as needed. Material support in animal facilities includes a significant
proportion of personnel used for routine cage washing, sterilising and filling of water bottles, and other routine tasks. Would the total personnel available be at a 30% level it is envisaged that material support staff could be utilised for the hands on animal maintenance aspects. In facilities where animal health is of a high standard it might be that for a short period cages may be reused, with a change of bedding, but without washing and autoclaving, thereby optimising the use of available staff for immediate animal care. On the subject of cage washers, autoclaves and similar equipment, in the time of a pandemic, failure of essential equipment has a potential to markedly exacerbate the problems created by a staff shortage, were the pandemic to occur over a long term. It is therefore critical that such equipment be regularly maintained, and subsequently replaced when reasonably frequent breakdowns occur.

Given the dedication of the scientific community within ANU it is felt that it would be relatively easy to persuade academic staff to assist in the maintenance of animals vital to their research projects in the event of significant support staff unavailability, with some reservation that research personnel will also likely be affected by a pandemic.

Below a critical animal care staffing level (including research staff) it may be necessary to euthanise animals. If this decision were made it should be mandatory that essential, often genetically unique, breeding stocks are given preference, and if needs be then this would necessitate killing experimental animals first.

Concerning the direct effects of avian influenza on animals there is at least one documented case of Avian Influenza killing large cats in Asia. The scientific literature documents evidence that human adapted strains of Avian Influenza cause a significantly higher mortality in laboratory mice than the same virus directly from birds. IVC’s will be an essential part of the rodent protection strategy.

The level of risk in this situation would depend very much on what percentage of animal care staff was affected, the capacity of research personnel to take over some of the duties, the virulence of the strain of virus, the duration of the pandemic, and the availability of human vaccinations. Given the foregoing discussion there are too many variables to categorise lines of action definitively.