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IPS INTERNATIONAL GUIDELINES FOR THE ACQUISITION, CARE AND BREEDING OF NONHUMAN PRIMATES: Codes of Practice 1-3

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PREFACE

These Codes of Practice have been prepared to supplement the IPS INTERNATIONAL GUIDELINES FOR THE ACQUISITION, CARE AND BREEDING OF NON-HUMAN PRIMATES (Primate Report 25: pp 1-27) which outline the general principles to be observed in order to ensure good practice and facilitate the well-being of captive primates.

Codes of Practice 1-3 give more detailed information as to how the guidelines can be applied to non-human primates in laboratories, breeding or holding units. While the codes of practice are intended to supplement the Guidelines, they may also be used independently.

Adherence to the Guidelines and Codes of Practice will not only encourage efficiency in the care giving staff, but will also improve the welfare of the animals and thus raise the quality of science based on them.

The Committee is grateful to those who prepared the documents and to the experts whose advice was incorporated in the final drafts.

IPS may publish further Codes of Practice, where the need arises. The present publication covers subjects which the Captive Care and Breeding Committee regards as the most important.

IPS Code of Practice: 1
HOUSING AND ENVIRONMENTAL ENRICHMENT

AIM

The aim of this code of practice is to specify in detail the requirements for housing and care and the criteria for ensuring that the welfare and behavioural needs of non-human primates are met.

The principle underlying this code is that captive primates should be provided with psychological well-being. This implies that they have the freedom to express most normal behaviour patterns (WEBSTER, 1984); primates, in particular, require stimulation and display a complex behavioural repertoire (MARKOWITZ & SPINELLI, 1986; WEMELSFELDER.1984).

PHYSICAL ENVIRONMENT

Primates are adapted to a natural habitat where survival depends upon a complex behavioural repertoire, the use of intelligence and constant vigilance. The greater the departure of the captive environment from the natural situation, the more critical each attribute of the enclosure becomes in terms of meeting the animal’s needs.
Physical factors of significance in housing primates are size of enclosure, construction materials, its complexity and methods of maintaining hygiene.

It is not necessarily true that the larger the enclosure the better this will be for the animal. Size of enclosure is only of significance in terms of usable space and complexity within it (e.g., a large room with bare walls provides only a floor as usable space); thus the quantity of space provided is less important than its quality (see Izard, 1991; Line et al., 1991). It is preferable to select the smallest suitable species of primate for study because it is less expensive to provide greater space and cheaper to replace damaged cage furnishings.

For primates, space is three dimensional and should allow the individual to display its normal repertoire of locomotor behaviour, namely, to walk, climb, jump and run. In an open situation, such as a compound, climbing frames or trees are recommended, or, in a cage, vertical climbing surfaces and perches.

Common primates used in the laboratory have a vertical flight response when alarmed by a terrestrial predator. Thus the vertical dimension of the cage is of importance and cages where the monkey is able to perch above human eye level are recommended (Harris, 1988).

Where it is necessary for the monkey to be confined in a restricted space and housed singly for a week or more, the provision of a large complex area with regular, but limited access, together with compatible companions, is recommended (see Jaeckel, 1989).

Ideally, monkeys should be kept in large cages or compounds where a complex social and physical environment can be provided. That this can be practicable, even in the laboratory, has been shown by Snowdon (1991) and Izard (1991). In large enclosures, to facilitate handling and manipulation, the animals can be trained to enter a smaller enclosure or cage by the use of suitable rewards (positive reinforcement) similarly, they can be trained to put out an arm or stand still to accept injections. In many cases monkeys are kept in small metal cages, on the grounds of economy of space and the fact that the cage can be put into an automatic cage washer and steriliser.

Recent experience has shown that such over-cleaning is not necessary and that the animals benefit when cages are custom built to extend from floor to ceiling thus taking maximum advantage of the space available in the room. Free standing wooden cages on a concrete base are very economical to build, compared with commercially purchased metal ones and dividers or smaller compartments can be installed to facilitate handling (Burt & Plant, 1990).

In most laboratories primates are kept indoors within a restricted range of temperature and humidity. Where outdoor facilities are provided there will be a degree of climatic variability, this can be beneficial, providing that tropical species in cold climates have access to a warm indoor area and shade is provided in hot climates. There is a danger that legislation specifying narrow temperature ranges may make it illegal to keep an animal at a temperature which it would commonly experience in the wild, for example, golden lion tamarins in their natural habitat in Brazil experience temperatures as low as 4°C, but in a European laboratory the
minimum at which they can legally be kept is 24°C. It must be appreciated, however, that the extremes of temperature which the animals experience in the wild may prove hazardous in captivity if they are incapable of behavioural or physiological temperature regulation.

While hygiene is of paramount importance, this should not be at the expense of providing environmental complexity and stimulation. The experience of zoos has shown that animals whose behavioural needs have been met in 'soft environments' are no more likely to succumb to disease than animals in traditional tiled and concrete floored enclosures which were washed and disinfected daily.

The primate should be provided with a 'soft' environment which is not necessarily less hygienic than the traditional metal cage. A woodchip substrate is actually bactericidal so that the provision of natural materials for primates should not lead to reduction in standards of hygiene (CHAMOVE et al., 1982).

The environment of the more primitive primates, such as prosimians, owl monkeys and callitrichids, which scent mark their cages should not be over cleaned as this will remove their chemical signals and is likely to create an unfamiliar and possibly more stressful environment.

ENRICHING THE ENVIRONMENT

Behavioural priorities

One of the aims of these guidelines is to provide opportunities for primates to express most normal behaviour patterns. However, all behaviours are not of equal significance to the animal and the opportunities to carry out certain types to behaviour are of particular benefit.

The most important of which are:

1. Opportunities for increased foraging (CHAMOVE et al., 1982)
2. Physical contact with conspecifics (HARRIS, 1988)
3. Novelty and variety, for example, complex devices which can be manipulated and objects which are destructible can also play a part in the relief of boredom and help to keep the primate active and alert (see BEAVER, 1989).

Some practical techniques

Two forms of change can be incorporated into the captive situation:

Unpredictable environmental changes which can elicit an adaptive response from the animal

Foraging time can be increased by providing some of the animal's food in such a way as to make its delivery or discovery unpredictable eg food can be concealed in the substrate or scattered about the enclosure. This also has the advantage that it increases usable space in the cage by encouraging the animals to use the floor. Artificial turf can provide a useful, readily
cleaned substrate for foraging (BAYNE et al., 1992).

For the small, more insectivorous mammals, zoos have found that cricket or mealworm dispensers can be provided (ie a hollow log with holes in it from which the crickets emerge spontaneously or a corkscrew plastic tube with holes in it containing fine sawdust and mealworms (see SHEPHERDSON, 19X9); there is no reason why a similar technique should not be used in laboratories, where experimental protocols permit. Electronic devices which dispense food, either randomly or on demand, can also be used where long term housing is contemplated for socially deprived or closely confined animals (MARKOWITZ and SPINELLI, 1986). The use of mobile artifacts can provide unpredictable environmental enrichment. A simple swing is always valuable and most primates will incorporate it into play sessions, it encourages jumping and balancing and, when more than one individual uses it, the position of the swing in space becomes difficult to predict.

A facility for the animal itself to generate changes

Through the provision of destructible materials. Natural materials such as logs and branches are often provided and can occupy the animal for long periods of time. However artifacts such as cardboard boxes, telephone directories, milk crates and heavy duty plastic buckets have also proved effective (O'NEILL, 1989); care must be taken to ensure that such artifacts do not contain toxic or hazardous materials and that boxes are not stapled. Extra labour will be involved in cage cleaning but this must be balanced against the gain in well-being of the primates.

Barrels, balls, baskets, simple puzzles and other toys have been used but their effectiveness seems to depend on their novelty. To overcome the problem of habituation, toys should be changed regularly. Primates are likely to habituate less rapidly to more complex artifacts which offer a range of possible manipulations. Electronic toys and games can also be effective (LINE et al., 1990). The kind of manipulation which is appropriate will also depend on the species of primate in question.

SOCIAL GROUPING

Unless absolutely essential, primates should not be housed alone in a cage on a long term basis (more than 30 days). Even for quarantine there are advantages in housing primates in compatible pairs.

The type of social grouping in the wild can be used as a guide when creating a captive group with respect to reproductive strategy (ie monogamous, harems, promiscuous or multi-male/multifemale) and kinship ties (ie family group, female bonded or male bonded group). JOHNSON et al. (1991) have shown that reproductive success may be increased in tamarins by creating natural social groupings.

A captive group of compatible individuals may not resemble the wild social structure, as laboratory animals are usually unrelated and often a female-biased sex ratio has to be
maintained, to avoid fighting between males. Captive breeding groups of macaques are usually harems, with one male and several females, because aggression between males in the more natural multimale/multifemale group can cause serious problems in a restricted space. These problems however can be overcome by designing an enclosure in such a way that animals cannot be cornered or blocked from food by dominant members of the group.

In providing a satisfactory social environment in captivity, individuals must be able to avoid aggressors, so that several food and drinking sources should be available to prevent one animal from monopolizing it (a situation which led to a court action in the UK).

In creating a captive social group, the main considerations should be that the animals show positive social interactions and a minimum of overt aggression. A useful indicator of good group compatibility, for younger animals, is the incidence of social play, because this is behaviour which only occurs in a relaxed situation (Fagen, 1981).

A compatible conspecific probably provides more appropriate stimulation to a captive primate than any other potential environmental enrichment factor. The presence of a conspecific enables the primate to utilise its repertoire of social behaviour which can occupy as much as 55% of the daytime activity budget in captivity (Harris, 1988).

Increased space does not necessarily lead to a reduction in aggression and in situations where group behaviour is controlled by a dominant individual, the opportunity to be out of sight of the controlling monkey may lead to more, not less aggression (Erwin, 1986).

When attempting to create compatible groups, the individuals’ reactions towards one another should always be carefully monitored before placing them in physical contact if fighting is to be avoided (see Reinhardt et al., 1988).

Where the experimental protocol makes it difficult to provide the animals with a sufficiently rich social environment, friendly relations with human caretakers can provide a valuable substitute. Even a few minutes a day spent stroking a monkey and allowing it to groom oneself will make a significant difference to the quality of its life. For the single housed primate, environmental enrichment is particularly important to reduce abnormal behaviours (Bayne et al., 1992).

Wherever it is practicable, it is worthwhile training primates to collaborate in carrying out particular tasks. This not only provides variation and gives the monkey some control over its environment but it also may be of great value if the animal has to be given medical treatment, weighed or moved from one place to another (see Heath, 1989).

Trained primates are of particular value in long-term studies, where monkey and experimenter may spend many years working together (Jaekel, 1989; Matsuzawa, 1989; Biological Council, 1992).
Rearing young primates

To ensure normal development, a social environment should be provided which is suitable for the rearing of offspring.

Primiparous females should have had experience of observing other females caring for their infants and, in some species, for helping in their rearing. Otherwise, when faced with an infant of their own, they may be neglectful or infanticidal (GARDIN et al., 1989).

The young monkey should not normally be separated from its mother at an early age (ie at 3-6 months) but should remain in contact for one year to 18 months, in most species. There is unlikely to be any greater productivity through early weaning, in seasonally breeding species, such as rhesus monkeys. Even in non-seasonal breeders, any slight increase in productivity must be offset against the resulting behavioural abnormalities of the offspring (GOOSEN 1989). It goes without saying that most biomedical research workers require normal, healthy subjects for their experiments.

Young primates should be reared with an appropriate social background, individuals who are weaned early or socially isolated are usually less adaptable and show higher levels of abnormal stereotyped behaviour (GOOSEN, 1989). They may also show deficiencies in social behaviour and abnormalities may even extend to the endocrine and immune systems (REITE, 1987).

ASSESSMENT OF WELFARE

The behaviour of captive primates should be monitored at regular intervals to determine their well-being.

Indicators of poor welfare are:

1. A restricted repertoire of behaviour in comparison with the wild. Any method of increasing the range of behaviours (apart from those associated with highly stressful situations) represents an improvement for the animals.

2. An abnormal activity budget; the individual may be underactive and not make full use of the environment, it may not interact with conspecifics and show little curiosity towards novel objects. Alternatively the animal may be hyperactive and over react to minimal stimuli.

3. Inadequate social behaviour, for example, primates may be hyperaggressive, fail to mate, prove infanticidal or neglectful of their young.

4. Abnormal behaviours such as stereotypies, self directed social behaviour, juvenile behaviour, learned helplessness or self mutilation (see ERWIN and DENI, 1979; POOLE, 1988).
There are considerable differences between species (CLARKE et al., 1988) and even individuals in the ways in which primates react to captivity (HARRIS, 1988), so that it is important that each animal should be regularly monitored to ensure that its needs are being fully met.

SUMMARY

The captive environment should incorporate sufficient usable space and environmental complexity to allow primates to show a wide repertoire of behaviour appropriate for the species.

The provision of compatible companions greatly extends the range of activities possible for the individual. Monkeys should, unless there are compelling reasons for not doing so, be housed socially.

Where single caging is unavoidable, the primates' environment can be improved by environmental enrichment to encourage a varied daily time budget, exercise, both physical and mental, and the development of motor skills.

Assessing environmental quality can best be achieved by monitoring behaviour to identify indications of poor welfare. Where possible, behaviour in captivity should be related to the species' natural repertoire and time budget.

Where behaviour is indicative of poor welfare, appropriate improvements to the environment should be made and the individual's behaviour regularly re-assessed to ensure that any improvements are not ephemeral.

Finally, while non-human primates should be provided with a stable home environment, there should be sufficient variability, in the form of temporally or spatially unpredictable events, to provide adequate levels of stimulation, the animal should also be able to exert some control over its environment

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IPS Code of Practice: 2
LEVELS OF TRAINING FOR CARE GIVING STAFF

AIM

The aim of this code of practice is to indicate the desirable levels of expertise which should be expected from staff responsible for the day to day care of non-human primates in the laboratory or breeding unit.

INTRODUCTION

These guidelines are intended to be applied internationally. In some countries there may be greater opportunities for training than in others but it is clearly impracticable to outline or recommend syllabuses or particular training courses. Where such courses are available, IPS encourages employers to offer opportunities for staff to attend them for the appropriate period or on a day release basis. The usual method of training in most countries, however, will be in-house by more experienced staff.

EXPERTISE REQUIRED FOR DIFFERENT LEVELS OF RESPONSIBILITY

The grades of knowledge will be specified from the most basic level to the most senior. Staff at each level must be familiar with all the knowledge required at lower grades.

Grade 1  Animal Technician

Food:

- appropriate diets for the animals
- optimum storage conditions, shelf life and control of vermin
- different methods of feeding (eg hoppers, dispensers, foraging)
- preparation of diets under hygienic conditions
- frequency of feeding and quantities of food required at different ages and reproductive states, such as pregnancy and lactation
- provision of any dietary supplements (eg Vitamin for callitrichid monkeys) and method of delivery

Water:

- familiarity with sources of drinking water
- the need for animals to have access to a constant supply of clean water
- maintenance and sanitation of water bottles or automatic waterers
Physical environment:

optimum and range of conditions appropriate for the species
appropriate conditions of temperature and humidity
familiarity with and ability to operate controls
changing air filters (where fitted)
checking and maintaining escape proof barriers
regular checking and, where necessary, cleaning of trapped drains

Hygiene:

understanding the needs of hygiene and likely results of inadequate cleaning
the need to wear appropriate clothing and protective accessories
maintaining personal hygiene
knowledge of frequency of cleaning routine
different methods of cleaning/disinfection/sterilisation
appropriate disinfectants and concentrations to be used
types of bedding and how often they should be replaced

identification of common vermin and control techniques
waste disposal methods which are hygienic and do not pollute the environment
correct storage of consumables, drugs and disinfectants

Health:

ability to recognise normal and abnormal behaviours and report changes
recognition of pain and distress
the detection of early signs of ill health in the animals
contact procedure to obtain veterinary advice
operation of isolation and quarantine procedures
responsibility for reporting to the management any illness among members of staff, to
determine whether it might be hazardous to the monkeys (eg TB or Herpes) and to
safeguard the health of personnel knowledge of basic nursing techniques

Relations with monkeys:

appropriate attitudes to the animals using a calm, gentle but firm approach
familiarisation and taming procedures
methods of safe handling including the use of sedatives in an emergency
awareness of compatibility between monkeys, particularly in a breeding colony
simple training for the animals to ensure their cooperation
Records and day book:

familiarity with methods of animal identification
procedure for daily reporting of all matters of significance in the unit to the senior technician
awareness of any security procedures
the writing of daily records (form of record, information required)

Grade 2 Senior Animal Technician

Experience:

all skills specified in grade 1
minimum of 4 years experience

Stockmanship and colony health:

maintaining supply of animals and knowledge of all associated legislation
processing animals for post mortem examination
the monitoring of animal health (see IPS Code of Practice 'Health of captive non-human primates')
responsibility for specific animals and allocating their care to particular staff

procedures for marking or tattooing animals for identification
familiarity with common diseases and their symptoms
familiarity with any zoonotic hazards
routine veterinary health monitoring procedures
dosing methods for common medicines
appropriate anaesthetics for the species and method of administration, assessment of depth of anaesthesia and control
maintaining a quarantine, hospital and isolation unit
special care during illness, or post operatively
maintain health records for each animal
recognition of hierarchical structure in colony, prevention and control of aggression
ability to operate emergency sedation and euthanasia techniques

Breeding programmes:

conduct and development of the breeding programme
recognising signs of oestrus and pregnancy, parturition and dystocia
monitoring maternal care
keeping detailed records of reproductive history, social compatibility and genetic relationships of all colony members
avoiding inbreeding
techniques for hand rearing rejected infants and subsequent socialisation procedures (if this is the policy of the unit)
Housing:

appropriate caging for the species with adequate space
provision and maintenance of cage furniture and forms of environmental enrichment
establishment of cleaning routine

Biology of animals: for each species

its geographical range and climate
reproductive physiology
natural social organisation of the species
natural diet and habitat
social groups which are appropriate for captive conditions
basic behavioural repertoire (or ethogram)

Management:

drawing up work schedules
monitoring staff performance and efficiency
staff training
ensuring that health and safety of staff are protected and that their vaccination histories are recorded and updated
procedures for dealing with bites and scratches
enforcing dress and hygiene regulations
monitoring staff health and ensuring that appropriate precautions such as vaccinations are up to date ensuring that there is good communication between all staff at all levels

Maintaining supplies:

regular stocktaking
recording sales or transfers to other colonies and supplying relevant documentation
ordering supplies of food and bedding and routine medications for the animals
checking the condition of all supplies and ensuring that commercial diets and medications are used before last date for shelf life and that they are stored correctly
replacement of worn or damaged cage furniture
knowledge of appropriate travel boxes for animals and national and international regulations relating to their transportation

Record keeping:

transferring information from day book to permanent files
regular updating of animal records: deaths, births, acquisitions, health, reproductive conditions etc
Experimental procedure:

knowledge of laws or regulations controlling experiments
consulting with the unit manager with regard to proposals which might infringe regulations
collaboration with scientists and veterinarians
being acquainted with the aims and requirements of the scientific research
expertise in humane handling and training the animals to cooperate in procedures
use and administration of analgesics
ability to carry out simple routine procedures with minimal stress to the animal

Grade 3    Unit Manager

Experience:

all skills of grades 1 and 2

Qualifications:

a degree in biological or veterinary science or animal technology or 8 years practical
hands-on experience in a primate colony
optional: an additional specialist qualification in primate medicine/primatology or laboratory
animal science

Responsibilities:

efficient and smooth running of the unit
preparation and management of budgets
maintaining staffing levels
the welfare of staff
high standards of animal welfare
ensuring that veterinary services are available at all times
availability of veterinary advice on matters such as disease
prophylaxis, zoonoses, methods of humane killing and provision of health certificates
provision of environmental enrichment to meet behavioural needs
staff training and education, motivation
staff working schedules and holidays
job descriptions
staff promotion and grading
production schedules
the prevention of any infringements of state laws
adequate insurance cover for the unit, its staff and third party claims
accountability to the local community in terms of noise, pollution, security of enclosures
Animal experimentation:

a good working relationship with the institute's veterinarian(s) to collaborate on all matters relating to animal health and welfare

good communication with the institute's scientists is essential

The unit manager should understand the scientific aims of the research on his animals and balance these against the severity of the procedure to be implemented ensuring that experiments causing harm to the primates use the minimum number of animals, employ the least stressful methods and could not be carried out using non-sentient material or species lower in the phylogenetic scale. In the event of a conflict between the unit manager and the scientist over the welfare of an animal, the manager should have the final decision. The unit manager should have the power, under exceptional circumstances, to terminate an experiment or euthanase the animal if he judges that the suffering inflicted is unjustifiable.

Advances in knowledge:

Unit managers should keep up to date with advances in laboratory animal science, animal welfare science and technological advances in the care and management of non-human primates. Where it is practicable and staff are available, research in primate husbandry methods, techniques for environmental enrichment and laboratory animal science should be encouraged in the unit.
HEALTH CARE

The program of health care for captive non-human primates will vary according to the origins of the animals and the species involved.

PRIMATES IN SOURCE COUNTRIES

Stock caught from the wild (feral primates).

A comprehensive and stringent program of health care of feral animals.

There should be a minimum period of four weeks conditioning. Where possible, this four week period should be extended to six weeks to allow a two week 'pre-conditioning' period at the place of capture. During this preliminary conditioning, the animals could be group housed depending on likely compatibility. In the transportation to the main conditioning facility, the crating, feeding and watering of the animals should conform to IPS standards defined elsewhere. Once at the main facility, animals should be housed in compatible pairs wherever possible. This enables the health of each animal to be more easily monitored. The animals should be housed as a batch in one room, adequately lit and ventilated. Once conditioning of that batch has commenced then no further animal should be introduced into that room. Should further stock have to be added, then the conditioning period should recommence for all stock in that room from the date that the last individual was introduced.

2 At the start of the conditioning period, each animal should undergo a complete physical examination by a veterinarian or a person suitably trained to carry out such procedures. Further examinations should be made throughout the conditioning period as appropriate. There should be a final check within a few days of shipment. These examinations should take into account the primate's general physical appearance, noting body condition with particular reference to musculature, coat, dentition, buccal mucosa, eyes, any physical deformities, loss of digits, healed fractures of limbs or tail, superficial wounds and any other conditions not normally associated with a healthy monkey.

3 Each animal should be weighed at least twice during the conditioning period.

4 There should be identification of each animal by means of a tattoo or tag according to which is more appropriate for the species.

5 Three tuberculin tests at intervals of two weeks are required for those species of primates susceptible to tuberculosis. Each test should be negative. Any reactor detected should be removed from the batch and the remaining stock retested until all animals in that batch have three consecutive negative tests.
6 Each animal should receive treatment against helminths. A standard procedure would be the use of ivermectin two doses at an interval of two weeks.

7 Any animal showing symptoms of illness, such as that associated with respiratory disease, diarrhoea or abscesses, should receive appropriate antibiotic and supportive therapy. Animals requiring surgery should be attended to immediately. There should be a small hospital unit where animals can be treated and isolated for intensive medical therapy. A laboratory service should be available to provide back-up diagnostic support.

8 A record card for each animal should be available, detailing date of arrival at the facility, species, animal number, weight, clinical examination and all procedures carried out. Where feasible, location of capture should also be recorded.

9 There should be an option to provide additional health screening procedures should they be required. Such procedures could include radiography, screening for Salmonella, Shigella and other potential bacterial pathogens, the detection of antibodies to Pseudomonas pseudomallei, Herpes B virus, Simian Immunodeficiency virus, Type D retroviruses, hepatitis A and B, measles and filoviruses.

Stock bred in captivity (captive-bred primates).

Captive-bred primates should be derived from stock that initially underwent a minimum health screening program, as outlined above. An additional two tuberculin tests and further anti-helminth therapy are recommended. The potential breeding stock should also be screened for Salmonella and Shigella by faecal sampling on three consecutive days. One should only use for breeding those animals found negative on testing. Positive Salmonella cases can be treated and used for breeding, if found to be negative on retest. Positive Shigella cases should not normally be used since elimination of the carrier state is difficult. The breeding stock could also be screened and chosen for having no antibodies to Herpes B virus, SIV SRV I and 2 depending on these viruses' relevance to the species of monkey concerned.

Once the breeding colony has been established, it should be monitored on a regular basis to ensure no breakdown in disease control. Such a programme should include the following which could be done every six months:

1. Anti-helminth therapy.
2. Tuberculin testing.
3. Salmonella and Shigella testing of faecal swabs from each animal.

If the colony is free from Herpes B virus and SIV, serologically monitoring of each animal should be undertaken once a year.
Primates weaned from these colonies should continue to be monitored, as above, with regular weight checks and veterinary clinical examinations.

Stock bred on islands (purpose-bred primates).

Such animals are derived from stock initially screened as described above and then placed on an uninhabited island previously free of other primates. Once a sustainable population is achieved on that island, weaned animals can be harvested. Such animals will have no records of parentage. Having come from an open environment, they would need to be subjected to a rigorous health care programme similar to that described for feral stock.

PRIMATES IN IMPORTING COUNTRIES

Feral, captive-bred or purpose-bred animals imported from source countries.

The health screening procedures for such stock will vary according to clients' requirements and the regulations for such animals within the importing country. A quarantine period of at least 30 days is usually required to ensure the health status of the animals is maintained and to provide a period of adjustment for the animals. Primates should not be imported from suppliers unable to provide the health screening programme described for feral stock. Each animal should arrive with a record card detailing all procedures carried out and be housed in conditions appropriate to the species. Though individual caging may be required, consideration should be given to pairing of young adolescent stock and compatible animals wherever possible. No mixing of new and old batches should occur. If this does happen, then the period of quarantine should start from the date of the last batch received. All animals of one species should be housed in one unit, separate from other species. A similar health monitoring of animals should be applied as outlined for feral stock in the source countries. This would include a preliminary physical examination by trained staff and immediate treatment of health problems. Further health monitoring of stock, particularly with regard to tuberculin testing and anti-helminth therapy, would depend on the policy of the primate facility and the degree of screening already implemented prior to arrival.

It is important to establish a standard protocol of health screening for primates from source countries particularly with regard to feral stock. The health care program outlined above is a minimum acceptable standard of care which will ensure the good health and welfare of each primate is achieved and maintained. It will also lessen the problems likely to be encountered in the importing country. For these reasons, it is essential that the importer only accepts animals from reliable primate facilities implementing protocols similar to those described.

Primates bred in captivity

Health screening of such animals should be similar to that outlined for breeding colonies in the source countries. However, with easy access to laboratory facilities and with the wide range of viral screening now available, there is a greater potential for monitoring the colony status of many viral entities. Where new colonies are to be established, consideration should
be given to have the breeding stock free of antibodies to specific diseases where these are known to be harboured by the species of primate involved and where these could be a potential source of health problems.

HEALTH CARE OF STAFF WORKING WITH NON-HUMAN PRIMATES

To avoid the transmission of infection from non-human primates to humans and vice versa, consideration should be given to the health monitoring of staff working with such animals. The transmission of disease can be substantially reduced by ensuring good animal care practices are maintained with appropriate protective clothing, personal hygiene and the facility to provide appropriate vaccinations and health screening of staff working in close proximity with primates. It would be a sound policy to have animal care staff vaccinated against tetanus, polio, rabies and screened for tuberculosis. Vaccination against measles and hepatitis would also be prudent when working with some species. The primate facility should have appropriate medical cover to ensure treatment of staff injuries and illness attributable to working with the primates. Such cover should ensure that each member of staff was made aware of the hazards of working with such animals and the preventative measures available to reduce such hazards. Provision could also be made to keep records of staff vaccinations and illnesses which could affect the primates on site; in conjunction with this, a serum bank could be implemented to store serum samples from staff.

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See related: IPS INTERNATIONAL GUIDELINES FOR THE ACQUISITION, CARE AND BREEDING OF NON-HUMAN PRIMATES