



Replacing animals
used in scientific research

Mannequins and dummies



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Scientists are busy developing some really exciting high-tech methods to replace the use of many animals in scientific research and teaching, like organs-on-a-chip, advanced animal mannequins and computer assisted learning.

replacement: where possible, replacing animal use with alternative techniques

What problem are scientists trying to solve?



Veterinary nurses need training to prepare them to confidently carry out a range of activities with a minimum of stress to the animals involved, including: preparing animals for surgery; assisting vets during examination, treatment and surgery; taking blood samples; giving medication and much more.

The solution 

Training on mannequins and dummies

Veterinary simulation clinics, featuring animal mannequins and dummies, are now being used at Unitec Institute of Technology to train over 300 students each year in handling for nose-to-tail examinations.

How is it done?

While assessments are still done on live animals, students are trained using mannequins, with one dog used to demonstrate the principles. The clinic features models for practising intubation, resuscitation, heart-rate monitoring and other health-monitoring skills. Students learn various holds for medical imaging and veterinary procedures such as bandaging and the use of syringes. Animal mannequins include dogs, cats and rats, as well as body parts such as skins and artificial veins.



Veterinary Simulation Suite at Unitec Institute of Technology, Auckland, New Zealand (photo courtesy of Dr Sabina Darke).

Medical procedures taught at the clinic

- Blood drawn from artificial veins
- Catheter placement in artificial veins
- Intubation on specially designed training mannequin heads
- Positioning for radiographs with training mannequins with realistic joints
- Heat rate checks on training mannequins with speakers in the chest
- Pulse checks on training mannequins with pulse in the back legs
- CPR on specially equipped training mannequins
- Attachment of auxiliary anaesthetic monitoring equipment on training mannequins
- Attachment of ECG machines on training mannequins
- Bandaging on training mannequins with realistic joints
- Suturing on synthetic skin
- Use of dental machines and equipment.



Veterinary nursing student practicing a hold on a mannequin dog
(Photo courtesy of Dr Sabina Darke).



Advantages

- Fewer animals are used in teaching.
- The mannequins allow students to practice until they've gained the confidence and abilities to work with real patients.
- Working with mannequins means students who aren't yet fully trained won't be carrying out procedures on any frightened animals. This reduces the stress levels of students and allows students to be more confident and faster when handling real patients.
- As the clinic is set up like a real clinic, students have to comply with all health and safety regulations associated with veterinary clinics.

"Student feedback is overwhelmingly positive. Students love the experience to just train a procedure and concentrate on the intricacies of the equipment, for example the use of catheters on fake veins or the settings on a fluid pump. As a result, they are much more successful when performing a procedure on a live animal for the first time. Student performance and success rates have also benefitted from the introduction of the simulation clinic." Dr Sabina Darke, Programme Leader Veterinary Nursing.



Disadvantages

- Mannequins don't fully replicate animal behaviour, and don't allow students an appreciation of all the aspects of pain and emotion that lead to animal distress.

References

Towards a Humane Veterinary Education. Martinsen S and Jukes N (2016). *Journal of Veterinary Medical Education* 43, No. 4. DOI: www.dx.doi.org/10.3138/jvme.32.4.454

Canine Prostate Palpation Simulator as a Teaching Tool in Veterinary Education. Capilé KV, Campos GMB, Stedile R, Oliveira ST (2016) *Journal of Veterinary Medical Education* 43, No. 4. DOI: www.dx.doi.org/10.3138/jvme.1214-120R1

Helpful links

www.unitec.ac.nz/about-us/simulation-veterinary-clinic-gets-upgrade

www.laerdal.com/la/Research/48272283/The-use-of-a-high-fidelity-simulator-for-veterinary-medicine-training

www.cvm.msu.edu/news/2016/new-simulation-models-for-hands-on-training

For further information

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