

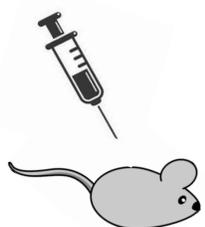
Alternative training method using a mouse simulator in intravenous lateral tail vein procedures.

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Introduction

- The purpose of this study was to reduce or replace mouse cadavers for use in procedural training
- Our small, in-house breeding colony was greatly reduced as a refinement due to unethical wastage
- Our five step training programme incorporates the use of cadavers in training towards competence
- An alternative method was necessary to maintain high standards and for future planning should our in-house breeding colony dissolve



Step 1 = Cadaver Training



Step 2 = Cadaver Competence



Step 3 = Supervision

Step 4 = Live Animal Assessment

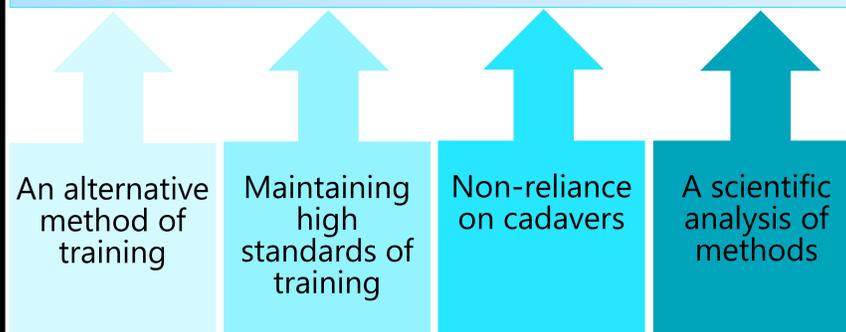


Step 5 = Competence



Project Goals

Major goals and objectives hoped to achieve with this project



Method

- For this study we took 2 groups of 10 participants (a combination of researchers and technical staff)
- This was a randomised, controlled trial with blinding at the assessment stage
- All participants had mixed experience in various technical procedures such as oral gavage, intraperitoneal injections, etc. but none had ever carried out intravenous injections of any kind
- An independent statistician was responsible for randomly allocating the participants into the two groups (cadaver and simulator)
- The simulator used was a 'mimicky mouse' model purchased independently. This model has 2 lateral tail veins leading to a reservoir. An intravenous tail injection into these veins can be simulated using sterile water
- Training was carried out following a standard operating procedure written specifically to mimic the same procedure for both methods
- Training on both cadavers and simulators was carried out by the same trainer who determined when participants were ready for a competence assessment
- The assessor for competence was blinded to which method the participant had trained with



Fig. 1

Results

- Competence was assessed by using a S1K method via injection into the lateral tail vein
- This method allows for a clear assessment of competence
- It is a straight pass or fail
- Results showed there appeared to be no significant difference between the simulator and cadaver²
- Overall pass rates were lower than expected
- Chi square p-value= 0.64

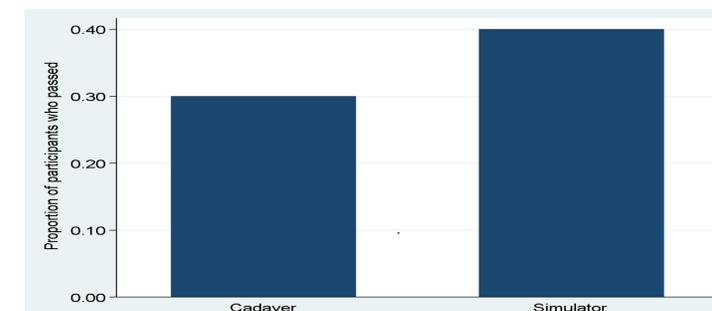


Fig 2

Conclusions

- Much larger numbers would be required to ensure an equivalence level of success
- It does demonstrate however that the simulator can be used as an alternative method of training with a level of success
- Quality of the training was not reduced
- This is a useful tool for facilities with no cadaver availability
- The study supports the 3R's objective to directly replace or avoid the use of animals (cadavers)
- Opens up the possibility of training in various procedures using a simulator
- The market is currently limited in good quality simulators for research training
- Organisations collaborating in training research could achieve statistical significance for various methods of training quality with simulators using these methods

References

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- <https://www.nc3rs.org.uk/the-3rs>
- Douglas C Vines, David E Green, Gen Kido, Harald Keller Evaluation of mouse tail-vein injections both qualitatively and quantitatively on small animal PET tail scans, 2011, J. NMT, vol 39, no 4, 264-270
- <https://www.vet-tech.co.uk/laboratory-supplies/training-simulator/mimicky-mouse-training-simulator.aspx>

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