NON-TECHNICAL SUMMARY

Training in complex surgical procedures

Project duration
0 years 6 months

Project purpose
None selected

Key words
No answer provided

Retrospective assessment

The Secretary of State has determined that a retrospective assessment of this licence is required, and should be submitted within 6 months of the licence’s revocation date.

Objectives and benefits

Description of the project’s objectives, for example the scientific unknowns or clinical or scientific needs it’s addressing.

What is the aim of this project?

This project will train surgeons in advanced, therapeutic, minimally invasive, surgical procedures.

A retrospective assessment of these aims will be due by 05 August 2021

The PPL holder will be required to disclose:
Is there a plan for this work to continue under another licence?
Did the project achieve its aims and if not, why not?

Potential benefits likely to derive from the project, for example how science might be advanced or how humans, animals or the environment might benefit - these could be short-term benefits within the duration of the project or long-term benefits that accrue after the project has finished.

What are the potential benefits that will derive from this project?

In many cases minimally invasive (keyhole) surgical procedures are significantly better for patients than open procedures as they are associated with less post-operative adhesions, less time in hospital, faster recovery, less pain, easier post-operative care and much faster return to active life. Consequently, many new minimally invasive procedures are being developed to replace larger, open procedures - particularly in response to the Governments new screening programmes for bowel cancer and aortic aneurysm among others. These screening programmes are identifying 30-40% more patients requiring surgical intervention for their conditions and the number of surgeons qualified in the new procedures is very limited. Un- or insufficiently trained use of these new procedures results in unacceptable death rates and long term side effects. We aim to teach surgeons these new, complex procedures, in terminally anaesthetised animals, to ensure rapid competency and safety. These courses will ensure an adequate supply of appropriately trained surgeons who will be able to fulfil the needs of our increasing numbers of patients using new minimally invasive procedures safely and effectively.

Species and numbers of animals expected to be used

What types and approximate numbers of animals will you use over the course of this project?

51 pigs and 8 sheep over the course of the licence

Predicted harms

Typical procedures done to animals, for example injections or surgical procedures, including duration of the experiment and number of procedures.

In the context of what you propose to do to the animals, what are the expected adverse effects and the likely/expected level of severity? What will happen to the animals at the end?

As all protocols are non-recovery, and animals are given an anaesthetic overdose whilst under anaesthesia, no adverse effects are envisaged. Also, at the end of the procedures, all possible tissue and organs are harvested for use in other studies as well as for use in other training courses.

A retrospective assessment of these predicted harms will be due by 05 August 2021

The PPL holder will be required to disclose:

- What harms were caused to the animals, how severe were those harms and how many animals were affected?
Replacement

State why you need to use animals and why you cannot use non-animal alternatives.

As yet, there are no simulators that truly represent the full physiological state necessary to teach these procedures. Current simulators are unable to replicate the blood and lymph flow of tissues and are also not able to replicate tissue responses to stimuli, muscular activity in bowel, effects of surgery affected by temperature, or tissue changes relative to procedures. We will endeavour to develop better simulators as these courses progress.

A retrospective assessment of replacement will be due by 05 August 2021

The PPL holder will be required to disclose:

- What, if any, non-animal alternatives were used or explored after the project started, and is there anything others can learn from your experience?

Reduction

Explain how you will assure the use of minimum numbers of animals.

By carrying out a number of procedures in one animal we can reduce the number needed and, as all animals will be deeply and terminally anaesthetised, there will be no suffering or adverse effects. Using 2 animals per 3 or 6 surgeons depending on the course also reduces the number of animals needed.

A retrospective assessment of reduction will be due by 05 August 2021

The PPL holder will be required to disclose:

- How did you minimise the numbers of animals used on your project and is there anything others can learn from your experience?

Refinement

Explain the choice of species and why the animal model(s) you will use are the most refined, having regard to the objectives. Explain the general measures you will take to minimise welfare costs (harms) to the animals.

The pig and sheep have been chosen for these courses as we need to represent the same size and physiology as humans, in particular with regard to blood system, lymph system, tissue response and general anatomy. Principally, animals are terminally anaesthetised and therefore insentient throughout. They are carefully monitored using staff trained, skilled and experienced in ensuring effective prolonged anaesthesia in these species.
A retrospective assessment of refinement will be due by 05 August 2021

The PPL holder will be required to disclose:

- With the knowledge you have now, could the choice of animals or model(s) used be improved for future work of this kind? During the project, how did you minimise harm to the animals?