

The action plan below sets out discrete actions that universities can undertake to support researchers in improving the reporting of animal research using the ARRIVE guidelines.

The ARRIVE guidelines were originally published in 2010, in response to significant concern raised among scientists, funders and policy makers about a lack of reproducibility in research involving animals. They received a comprehensive revision and update – ARRIVE 2.0 – in 2020. Since their publication, they have been endorsed by over 1000 journals and dozens of universities, and compliance with them is a condition of receiving animal research funding from many major funders.

Despite this, information specified in the guidelines is still absent from most published animal research manuscripts. For example, a recent study of over 51,000 open-access animal research papers found randomisation to experimental groups was mentioned in 37% of the publications, blinding in 12% and a power calculation in just 7% [1].

As such, the NC3Rs has developed a strategy to facilitate and increase use of the guidelines by researchers and other stakeholders, including universities. As part of this, we have developed this action plan, which lays out possible interventions that universities could undertake to increase adherence with the guidelines in published manuscripts. The activities in this action plan are laid out in three levels, on the basis that Level 1 activities can be achieved most easily and quickly, and higher-level activities worked towards going forward.

For universities, a helpful first step towards implementation of ARRIVE is to identify an individual with responsibility for ARRIVE compliance at an institutional level. For example, in the UK, establishment licence holders are responsible for ensuring that research involving animals is performed in a manner consistent with the principles of replacement, reduction and refinement (the 3Rs), of which transparent and accurate reporting is an integral part [2].

Level 1: Highlighting ARRIVE

- Make a public statement endorsing the ARRIVE guidelines, and display this prominently, for example in sections of the university website detailing institutional policies on animal research. This should include an expectation for animal researchers to consult the ARRIVE guidelines and adhere to, at minimum, the ARRIVE Essential 10 in any submitted manuscript describing animal research.
- Promote ARRIVE resources to all researchers who work with animals. These are available from the ARRIVE website and include, explanations and, examples of good practice, a webinar explaining the basis of the guidelines, translations, and checklists for authors, presentations, translations, and checklists for authors to submit to journals with their manuscript.
- Ensure the local animal ethics committee, such as the AWERB, IACUC or equivalent, raises awareness of the guidelines and associated resources among animal researchers seeking approval to conduct animal experiments. For example, this could take place during committee meetings, or be highlighted to researchers on ethical application forms.

Level 2: Broadening Knowledge

- Encourage researchers who publish animal research to adhere to the full ARRIVE guidelines (the Essential 10 and the Recommended set) in any submitted manuscript describing animal research, and to submit an author checklist to a journal alongside their manuscripts.
- Provide training for animal researchers highlighting the importance and benefits of transparent and complete reporting. This should cover the information included in the ARRIVE guidelines, the rationale for reporting this information, and how it relates to the reliability of the results.
- Distribute hard copies of the guidelines to animal researchers. The NC3Rs will provide pocket-sized hard copies of the ARRIVE guidelines 2.0 to universities, or directly to researchers upon request.
- Request evidence of compliance with the ARRIVE Essential 10 in any animal research manuscripts published by university researchers. For example, request that researchers provide copies of completed author checklists to the AWERB/IACUC, research integrity office, or similar university body upon publication. This expectation could be laid out to researchers in guidance for writing project applications. (including by the AWERB, IACUC or equivalent).

Level 3: Monitoring Adherence

- Integrate the ARRIVE guidelines into the ethical approval process. For example, request that researchers provide information in line with the ARRIVE Essential 10 on ethical application forms. This will promote rigorous experimental design among animal researchers and encourage better reporting in publications resulting from the research, as the information to report will have been defined beforehand.
- Take steps to monitor or audit compliance with the ARRIVE guidelines in animal research publications from the institute. Opportunities to monitor compliance include questioning whether an ARRIVE checklist has been submitted alongside published manuscripts, at occasions such as mid-term or end-of-licence ethical review meetings, or when collating submissions at a university-wide level for research assessment exercises, such as the REF.

References

1. Menke, *et al* (2020). *iScience*. doi: [10.1016/j.isci.2020.101698](https://doi.org/10.1016/j.isci.2020.101698)
2. UK Home Office, [Guidance on the Operation of the Animals \(Scientific Procedures\) Act 1986](#)