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Tougher guidelines on animal research can help quest for cures, study suggests

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A study of animal-based research published over the last 70 years suggests that leading scientists could have done more to ensure impartial outcomes; experts hope that guidelines introduced in 2010 will help to improve chances of discovering effective new medicines for stroke, dementia and other conditions.

These guidelines require scientists to demonstrate robust experimental design before their work is funded or accepted for publication in journals and will help to minimise bias in animal experiments, researchers say. Otherwise these biases may exaggerate the effects of the treatment that is being tested.

The analysis, led by the University of Edinburgh, is publishing October 13th in the Open Access journal *PLOS Biology*. The team first looked at a random sample of 147 animal studies published between 1941 and 2012. They found only one in five studies reported that researchers had randomly assigned animals to experimental groups, to help ensure that the groups are identical at the start of the experiment.

Moreover, fewer than one study in 20 had used 'researcher blinding', where the researchers were unaware of which groups the animals had been assigned to. Researcher blinding prevents scientists from unconsciously influencing the results of their experiments based on their expectations.

Next, they looked at 2671 studies published between 1992 and 2012, to

see whether the situation was any better in leading journals with the highest impact factor (a commonly used but disputed measure of journal "quality"). They found that randomisation was reported more frequently in journals with lower impact factors and this was more pronounced in recent years.

Finally, they examined more than 1000 animal studies from the UK's top five universities that were published in 2009 and 2010. They found that less than a third of studies had reported appropriate measures to reduce the risk of bias in experiments. Around one in six studies reported that they had randomly assigned animals to experimental groups and one in seven had used researcher blinding.

The findings confirm earlier reports that the quality of experimental design reported in the published literature could be significantly improved, and extends the range of situations in which lower quality research has been observed.

Lead author Professor Malcolm Macleod, of the University of Edinburgh, said: "I don't believe for a moment that scientists set out to do anything other than excellent research, but what this work shows is that there is considerable room for improvement. We have been working with the scientific community at all levels both to bring about that change, and to measure the progress made."

More information: Macleod MR, Lawson McLean A, Kyriakopoulou A, Serghiou S, de Wilde A, Sherratt N, et al. (2015) Risk of Bias in Reports of In Vivo Research: A Focus for Improvement. *PLoS Biol* 13 (10): e1002273. DOI: 10.1371/journal.pbio.1002273