EDITOR'S CHOICE

We need better animal research, better reported

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The BMJ

New drug development is underpinned by animal research, but is the animal evidence base fit for purpose? A collection of articles published in *The BMJ* this week suggest not. They conclude that the preclinical foundations of clinical research are shaky and in urgent need of reform.

The articles focus on one example: the testing of a new vaccine, MVA85A, designed as a booster to BCG vaccine to improve the prevention of tuberculosis. Vaccine researchers were shocked when a large trial in South African infants failed to show that MVA85A worked, seeming to contradict the positive results of animal studies. But, as Deborah Cohen reports (doi:10.1136/bmj.j5845), the animal research gave a far more mixed picture than had been reported to funders, regulators, ethics committees, and the parents of infant participants. An independent systematic review in 2015 concluded that the animal studies did not provide evidence to support MVA85A's effectiveness.

While publicly relying on claims that the vaccine had been shown to be safe and effective in animal studies, the MVA85A researchers played down their significance when speaking privately. *The BMJ* has been told that the apparent disparity between the animal and human results has led major funders to rethink their priorities, possibly slowing progress in the entire tuberculosis vaccine field. Cohen's investigation also shows how hard it can be to obtain basic information, such as the

protocol for a key study in macaque monkeys, leaving unanswered questions about the study's exact purpose.

In a linked editorial Malcolm Mcleod is scathing about the paucity and quality of the MVA85A animal studies (doi:10.1136/bmj.k66). "When animal data are pivotal in developing new treatments, we should insist on more robust evidence before proceeding," he says. He and our other editorialists make it clear that this is a problem endemic to animal research. Merel Ritskes-Hoitinga and Kim Wever call for "a cultural change in which researchers are rewarded for producing valid and reproducible results that are relevant to patients, and for doing justice to the animals being used" (doi:10.1136/bmj.j4935). Our new sister journal *BMJ Open Science* (openscience.bmj.com) has implemented many of the innovations they call for (doi:10.1136/bmj-2017-ined).

Astute readers will recognise that this is not an attack on the development of new vaccines, which are more needed now than ever. Nor is it an attack on the use of animals in research for drug development. This story is about the urgent need to improve the integrity of animal research—its reliability, reproducibility, analysis, reporting, and interpretation—to increase the chances that it translates into real improvements to human health.