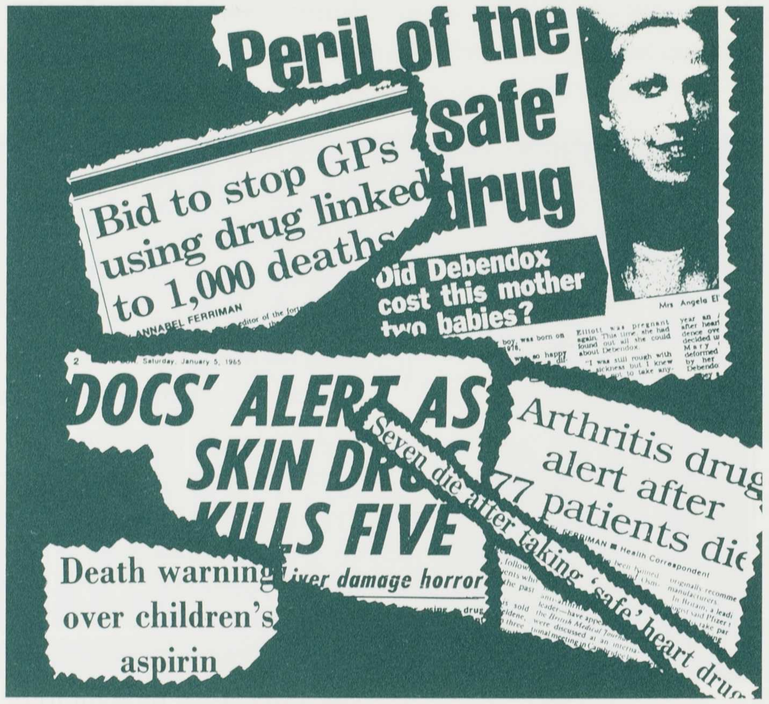
of several anti-inflammatory agents recently withdrawn on safety grounds. Deaths occurred mainly through liver damage but in the animals considered closest to us – non-human primates – no evidence of toxicity could be seen at 7 times the maximum tolerated human dose for a year.[30]

▶ *When disaster strikes, criticism of animal "safety" testing is rarely mentioned.*


Peril of the 'safe' drug
Bid to stop GPs using drug linked to 1,000 deaths
Did Debendox cost this mother two babies?
DOCS' ALERT AS SKIN DRUG KILLS FIVE
Death warning over children's aspirin
Liver damage horror
Seven die after taking 'safe' heart drug
Arthritis drug alert after 77 patients die

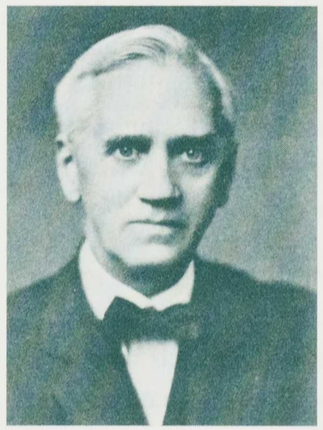
During the 1960s thousands of young asthmatics died following use of isoprenaline aerosol inhalers. Isoprenaline is a powerful asthma drug and deaths were recorded in countries using a particularly concentrated form of aerosol. Animal tests once again failed to reveal the hazards and indeed cats could tolerate 175 times the dose found dangerous to asthmatics. Even after the event it proved difficult to reproduce the effects in laboratory animals.[30]

Japan suffered a major epidemic of drug-induced disease in the case of clioquinol, the main ingredient of antidiarrhoea medicine Enterovioform. At least 10,000 people were victims of a new disease called SMON (subacute myelo-optic neuropathy) whose symptoms included weakness in the legs, paralysis and eye problems including blindness. The effects are caused by nerve damage yet tests by Ciba Geigy with rats, cats, beagles and rabbits revealed no evidence that clioquinol is neurotoxic.[30]

Animal tests have failed to predict many other hazards:[30] the addictive properties of the benzodiazepine minor tranquilizers; the deadly diarrhoea associated with antibiotics such as clindamycin; the fatal blood disorder caused by the antibiotic chloramphenicol; and the liver damage linked to a wide variety of medicines including the antifungal drug Nizoral, the anesthetic halothane, the arthritis drug Ibufenac and the antidepressant Zelmid.

Apart from failing to reveal many of the hazards, animal experiments could also lead to the rejection of potentially valuable medicines on the basis of side effects which never occur in people. This needs to be taken seriously because a comparison between human and animal test data found that, at most, only one out of every four side effects predicted by animal experiments actually occurred in people.[31]

▼ *Penicillin, discovered by Fleming, was thankfully not tested on guinea pigs. The drug kills them and in other animals causes fetal deformities. Happily, humans react quite differently.*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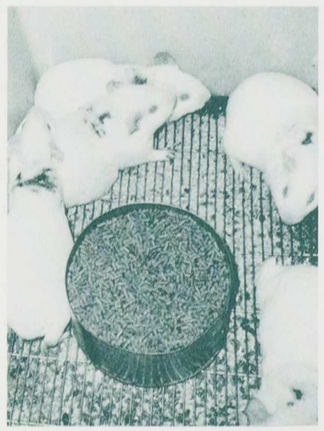
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Many long established drugs exhibit sufficient toxicity in animals to make it unlikely they would be introduced with today's greater emphasis on animal research. Had penicillin been tested during its development on guinea pigs, to whom it is highly toxic, this important antibiotic might have been discarded.[32] Frusemide is a valuable diuretic but causes severe liver damage in mice because of a metabolite not formed to any serious extent in people;[33] iron sorbitol is used to treat iron deficiency anaemias but causes sarcomas at the site of intramuscular injection in rats and rabbits although clinical experience has revealed no real hazard to patients.[33] Narcotic drugs such as morphine were discovered without animal research and remain invaluable