any given patient, for example, in a clinical study or during ordinary every-day clinical practice, the recommended drug dose may be expressed in terms of body surface area. Hence, where toxicology studies or efficacy studies with animals result in an appropriate dose, and where researchers have expressed this dose in terms of body surface area, the same dose may be appropriate for humans. The FDA provides a conversion table, for changing a dose found appropriate for animals to a corresponding dose for humans, where this conversion is based on body surface area (95). The FDA's conversion table also includes a factor of 0.1, where the dose arrived at by the calculation is multiplied by 0.1, in order to ensure that the dose in humans will not be toxic (96). The resulting dose, as found with the FDA's table, is expected to be the dose that results in no observed adverse effect, where higher doses or concentrations would result in an adverse effect. The table provides separate conversion factors, for converting animal doses to human doses, for the mouse, rat, rabbit, dog, monkey, and pig. After the investigator applies the scaling factor, the resulting number is called the human equivalent dose (HED) (97). The species that generates the lowest HED is called the most sensitive species. After arriving at the HED, the HED is further modified by applying a safety factor. Thus, according to FDA's Guidance for Industry (98) "[a] safety factor should then be applied to the HED to increase assurance that the first dose in humans will not cause adverse effects."

[95] U.S. Department of Health and Human Services, Food and Drug Administration. Guidance for Industry. Estimating the Maximum Safe Starting Dose in Initial Clinical Trials for Therapeutics in Adult Healthy Volunteers (July 2005).

[96] Ochoa R, Rousseaux C. The role of the toxicologic pathologist in risk management. *Toxicol Pathol*. 2009;37:705–707.

[97] U.S. Dept. Health and Human Services. Food and Drug Administration. Guidance for Industry. Estimating the safe starting dose in clinical trials for therapeutics in adult healthy volunteers. U.S. Dept. of Health and Human Services, Food and Drug Administration. 2002;24 pages.

[98] U.S. Dept. Health and Human Services. Food and Drug Administration. Guidance for Industry. Estimating the safe starting dose in clinical trials for therapeutics in adult healthy volunteers. U.S. Dept. of Health and Human Services, Food and Drug Administration. 2002;24 pages.