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The remarkable therapeutic potential of response-based dose individualisation in drug trials and patient care

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Highlights:

- Most drugs are reportedly effective in only 25–62% of patients
- Dose-finding trials are usually designed to find the optimal dose for the patient population
- The optimal dose for the population can be suboptimal for a large proportion of the patients in the population
- Dose titration, where appropriate, can remarkably increase the response rate without compromising the overall benefit:risk ratio
- Titration addresses relevant questions for patient care: how likely is it that a patient responds to the therapy, to what extent and at what dose?

Teaser: Titration drug trials can best inform clinical practice and maximise therapeutic benefits.

The FDA reported that most drugs are effective in only 25–62% of patients. Although many drugs require dose individualisation in clinical practice, dose-finding trials usually aim to identify an optimal dose for the patient population. Such a dose would be suboptimal for many patients. Simulations show that individualised dose titration, balancing efficacy against toxicity, can remarkably increase the response rate – doubling it in some situations. Dose titration in a clinical trial can efficiently establish the realistic expectations for the drug's true utility in a trial setting that reflects clinical practice, as well as generate important knowledge to guide patient care through informative drug labels. This design answers key questions truly relevant to patient care that other designs cannot – how likely will a patient respond, to what extent and at what dose? Therefore, response-based dose titration should be considered for dose-finding trials, where appropriate, for drugs that will eventually be used this way in the clinic.