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Ingelfinger JA, Mosteller F, Thibodeau LA, Ware JH. Biostatistics in Clinical Medicine. 3rd ed. New York-Toronto: McGraw-Hill; 1994.
418 pages, paperback. ISBN 0-07-105415-4. Price: GBP27.50.

The book, written in an easy-to-read English, is divided into 17 chapters, 14 principal and three supplementary, with three appendices containing not only statistical tables and brief solutions to some problems encountered in the chapters, but also 17 additional problems for testing the readers' understanding of the topics. Solving the problems is probably the only way of testing our ability to apply the obtained statistical knowledge.

The book first introduces the theory and practice of diagnostic testing in clinical and laboratory medicine, discussing topics such as accuracy of diagnostic procedures (sensitivity, specificity, predictive values), probability and odds, Bayes theory, calculations using binomial and hypergeometric distributions, and constructions of diagnostic decision trees using pre-test and post-test probabilities. The title of the third chapter: *Screening for Breast Cancer – Guidance from Decision Trees* illustrates why I found the concept of the book to some extent different from the usual one. Almost all chapters of the book (or chapters' subparts) are designated in a similar way – presentation of a medical problem, followed by a brief statistical explanation.

Chapters 4 and 5 explain general properties of variations, Gaussian and t-distributions, measuring and variability, introducing the theory of statistical hypothesis, statistical tests, significance, and confidence limits. The problems are again presented as answers to the questions related to clinical practice and not statistical or mathematical theory (e.g., *Has the treatment helped the patients*; Chapter 4). These chapters are followed by the explanations of the Poisson distribution and proportions, elements of p-value calculations (discussing one-sided and two-sided tests, advantages and disadvantages of the 0.05 fixed significance level, sample size and test power), contingency tables, and a chi-square test (Chapters 6-8). Apart from the valuable statistical information, these chapters also give general advice to clinicians concerning the usage of confidence intervals and p-values, and differences between statistical and practical significance.

Chapter 9 deals with different aspects of regression analysis, whereas the next one introduces a general concept of life table analysis explaining the clinical management of stable angina pectoris.

Chapters 11-13 discuss various statistical topics related to clinical trials and epidemiology studies, introducing and explaining statistical meaning of the terms like bias, chance, effect, sample, control, stratum, randomizing, follow-up, and blinding. When discussing the aspects of clinical trials, the authors emphasize the importance of insignificant p-values, inaccurate diagnosis or suboptimal therapy for the results of a study. A useful checklist for reading a clinical trail report contains the questions which should be answered correctly if the analyzed trial was properly conducted. There is also a part about performing the trial, with the advice which should be followed before and during the investigation. The chapter on epidemiological studies contains good explanations of differences between case-control and cohort studies, sometimes misinterpreted in clinical studies, introducing the common measures of risk, such as relative risk and odds ratio.

The last chapter comprehensively presents the technique of meta-analysis, research synthesis for combining quantitative information reported in several independent studies related to the same problem.

"Clinical problem – statistics" pattern appears throughout the chapters. There are basic mathematical equations explained in a common language, and not only by using pure mathematical notations. Statistical theory relies on the presented introductory problems from the clinical practice, for which the authors mostly use data from the studies published in highly ranked medical journals.

Important definitions of statistical rules, methods or terms are in separate boxes with phrases related to the topic printed in bold. These distinct parts are easy to find when one skims through the text for a specific information but only if the book was previously thoroughly read, which I fully recommend.

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