Considerations on what is meant by “Qualified Statistician” in Regulatory Submissions

Christoph Gerlinger on behalf of the subcommittee on Statistics in Regulatory Affairs of the International Society for Clinical Biostatistics *

International regulatory guidelines require that a “qualified statistician” takes responsibility for the statistical aspects of a clinical trial used for drug licensing[1], yet to our knowledge no consensus on what constitutes a “qualified statistician” has been developed so far[2]. The subcommittee on Statistics in Regulatory Affairs (SiRA) of the International Society for Clinical Biostatistics (ISCB) has drafted this discussion paper in order to stimulate the discussion.

PREAMBLE

There are many different academic and professional career paths to become a qualified statistician for clinical trials, including specialized university degree programmes [3] and certificates from learned societies [4]. Therefore, it is clearly out of the scope of this paper to provide an exhaustive overview. Instead the authors aimed at defining guiding principles which should be considered.

ACADEMIC TRAINING

Qualified statisticians should not only be able to apply statistical methods correctly, but also to fully understand their operating characteristics in order to judge the suitability and the limitations of the statistical methods employed for the concerned medical problem. Qualified statisticians should also be able to assess the merits of newly published methods and to apply them, if appropriate, to the practical problem they are faced with.

Therefore, the academic training of a qualified statistician should be equivalent to at least a master’s degree in statistics. This could be achieved directly by studying (bio-)statistics or by studying a closely related science such as mathematics with a specialization in statistics.

PRACTICAL TRAINING

Qualified statisticians should be able to understand the basic medical issues of the medical area they are working in. This includes not only the efficacy measures but also the general safety [5] and the specific safety [6] issues of the therapeutic/diagnostic area. Knowledge of patient reported outcomes (PRO) measurements is also needed, where relevant.

Qualified statisticians should know the regulatory context in which drug development takes place. This includes the ethical principles of biomedical research, relevant laws and regulatory guidances, the framework of good clinical practice (GCP) as well as the standard operating procedures of the statistician’s institution.

Extensive practical knowledge and experience of the planning, analysis and reporting of clinical trials is needed in order to take responsibility for the results [1]. This means that a statistician should have planned, analysed and reported multiple studies under the supervision of a qualified statistician for 1 to 2 years before taking over responsibilities as a qualified statistician. Since clinical trials usually take several years to complete, different studies may be needed to learn to plan, analyse and report. The practical knowledge should include sound understanding of methods of computational statistics and of the software used to manipulate and to analyze the data. Software used for statistical analysis usually allows users to write their own sub-routines in order to implement methods not yet supported by the ready-to-use procedures of the package used. Qualified statisticians should be able to program in, at least one, package or programming language since all packages have their pros and cons in terms of capabilities. Basic knowledge of data bases and aspects of data security and data protection is also recommended.

CONTINUED TRAINING

It is essential that qualified statisticians maintain their expertise by continued professional development in all domains addressed above. Recommendations for continued training include attending related conferences (e.g. ISCB, IBS conferences) and workshops, and keeping abreast of the statistical literature.

It should be considered that training of new statisticians might also be relevant to experienced statisticians who change for example their therapeutic area or move from a Phase I unit to later phase clinical trials.

* Members of the committee were Harbajan Chadha-Boreham, Switzerland, Lutz Edler, Germany, Tim Friede, Germany, Christoph Gerlinger, Germany (chair), Jen-pei Liu, Taiwan, Christos Nakas, Greece, Martin Schumacher, Germany, and Jørgen Seldrup, France. Address for correspondence: Dr. Christoph Gerlinger, Global Clinical Statistics, Bayer Schering Pharma AG, 13342 Berlin, Germany, e-mail: christoph.gerlinger@bayerhealthcare.com

[1] “Each individual involved in conducting a trial should be qualified by education, training, and experience to perform his or her respective task(s).” ICH E6: Guideline for Good Clinical Practice. The “responsibility for all statistical work associated with clinical trials will lie with an appropriately qualified and experienced statistician”. ICH E9: Statistical Principles for Clinical Trials (both on www.ich.org)

[2] Zoe Williams, Kit B. Roes, Nigel Howitt. Qualified Statisticians in the European Pharma Industry: Present and Future Directions. Drug Information Journal 2009 : 43(05) 573-583.

[3] e.g., MSc in Medical Biometry/Biostatistics

[4] e.g., Chartered Statistitican by the Royal Statistical Society, UK (www.rss.org.uk/main.asp?page=1290) or the Certificate “Biometrie in der Medizin” of the German region of the International Biometric Society and the Deutsche Gesellschaft für Medizinische Informatik, Biometrie und Epidemiologie (www.gmds.de/pdf/organisation/zertifikate/cert_biometrics_in_medicine.pdf)

[5] e.g., adverse events, blood chemistry, vital signs.

[6] e.g., menstrual bleeding pattern in women’s health.