General discussion
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Quality control of medical education is a subject of continuous concern of Medical Schools in the Netherlands. Since the objectives for undergraduate medical education are stated in the national Blueprint,¹ and are legislated,² medical schools should define the quality of their education related to the requirements of the Blueprint. This means that medical schools should guarantee that students who pass the final examinations meet all the objectives of the Blueprint. During the final examinations, several forms of assessment are used to evaluate the level of the students' knowledge, skills and attitude. By comparing the results of the examinations with the requirements which are described in the Blueprint in terms of 'general objectives', 'problems' and 'discipline-related diseases and skills', the quality of the output of education can be evaluated. This can be considered as the heart of the quality control of education. However, this educational output depends on the input provided by the school,³ such as teachers, tutors, educational means (books, electronic tools, patients with diseases, skills-labs etc.), and the ways students are learning (the cognitive process).⁴ Therefore, quality control should focus not only on the output, but also on the process of learning and on the input.

In evaluating the quality of education, one should define the subject of study, as well as the instrument to measure this subject. The Blueprint describes experience with discipline-related diseases as requirements for students. These requirements can only be met when patients with these diseases are available, and when students meet these patients for learning purposes. In this thesis the diseases related to the discipline of Internal Medicine were selected as the subject of study. An instrument was developed to measure the availability, and the use of patients with these diseases for educational purposes. It was necessary to develop an instrument because the Blueprint as such is not an evaluation instrument; it has some characteristics related to its content, volume and practicability which makes it not feasible in practice as an evaluation-instrument.⁵ Therefore, the part of the Blueprint consisting of the diseases related to the discipline was modified by a medical specialist, an educationalist and an undergraduate doctor. Because the number of discipline-related diseases is too large to fit into a clerkship, the diseases were clustered together into
several groups based on similar pathogenesis and/or symptomatology. Thereafter, the diseases were distinguished into 'core' and 'optional'. Students should experience all of the 'core' diseases, while from the 'optional' diseases, they must encounter a selection of the total number. The logbook created was discussed by the educational committee of the department which considers it to be a valid instrument.

The records in the logbook about the diseases encountered, make it applicable as an evaluation instrument in several ways. In the first place it is an instrument to count the diseases available at a department. With respect to this evaluation function it is preferable that experts (doctors) fill out the logbook in order to maximize the reliability of the information. However, this is an expensive way to measure the number of available diseases. Nonetheless, to get an indication of what kind of diseases are available within a department it is recommendable that doctors fill out the logbook periodically. Secondly, the logbook can be used to evaluate whether students encounter the diseases that they are supposed to encounter. For this purpose the students themselves should fill out the logbook. However, when logbooks are completed by students, it appears that their registrations are not always objective. Students make two types of errors when filling out logbooks. Firstly, they do not record all the diseases available at the department (missed events). Secondly, it also appears that they record diseases which are not present at all (false identifications); however the number of these errors is very small compared to the first one. Therefore, logbook information from students is not completely indicative for the diseases that a department offers; yet it is indicative for what the student has learned.

But if self-reported data of students' logbooks are a source of bias in terms of under- and overreporting, why then use this data to determine the quality of medical education? The answer is that they are the best data we have. As De Groot states,³ if one wants to detect learning effects, one must go to the student and ask them what they have learned. The students themselves are the experts concerning the learning effects they have achieved. Therefore, self-reported data are the most suitable data source to examine the quality of what students have learned. This means that we should try to improve the quality of information that students report in their logbook. This can be done by supervising students and by giving them feedback to identify knowledge gaps,
and by helping them to fill out logbooks according to their real experiences. In these activities a central role is reserved for all teachers. Residents but also specialists make important contributions to the students’ education by supervision and coaching of students through the daily activities on the floor, and by being a role model in professionalism and teamwork.6,7

However, doctors are trained experts in what they teach, but they normally have had no training in how they teach.7,8 This implies that we must provide medical teachers (doctors) with an adequate training to fulfill their supervising and coaching role. Another aspect that will improve the quality of data in students' logbooks concerns the status of the logbook in assessment procedures. As assessment drives learning,9 students will do what the examination programme tells them to do and will not do whatever the examination program does not reward. The logbook can then serve as a formative or summative evaluation tool of individual students, and can be put into a portfolio as the collected evidence that learning has taken place and to demonstrate the progression of learning in personal and professional development.10

In this study, after developing an evaluation instrument, we have investigated the availability and the students’ use of the input variable ‘diseases related to the discipline Internal Medicine’. Besides, there are also other variables which are relevant to measure, such as the skills related to this discipline, for instance palpation of lymph nodes or intravenous cannulation. Next to the discipline Internal Medicine, there are other disciplines with their own diseases and skills as mentioned in the Blueprint. There are also other objectives in the Blueprint (general objectives and problems) to be evaluated. Moreover, students spend their clerkships not only in the university but also in the affiliated hospitals, and because most clerkships consist of an outpatient and inpatient component, it is also important to evaluate the experiences during each part. Furthermore, as mentioned before, there are many more input variables, such as the teachers, the educational means and the lectures, of which the quality can be studied. Besides, it is useful to know something about how students learn, as it appeared that under particular curricular conditions medical students can adopt highly effective ways of learning.4 It seems that students make more sense of the basic science information when this is presented in the clinical context,11 and students learn better when learning take place in a
context where they actively participate. As students during the clerkships judge that they spend less time on the most valuable learning experiences such as autonomous patient-encounters and follow-up of patients, it is important to know more about these aspects. Finally, the guideline function of the logbook should be evaluated by asking students whether they really use the logbook as a means to learn what they are supposed to learn. In conclusion: quality control of medical education is not to be restricted to quality control of the educational output, but should also be directed to educational input and to the learning process. This means that in the near future efforts should be made to develop other measuring instruments and to use these instruments to evaluate the quality of educational input- and procesvariables in order to optimize the educational output and to satisfy the requirements of the Blueprint.

References

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