The objectives-based logbook
Raghoebard-Krieger, Helga Maria Josette

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Summary
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In the Netherlands medical schools are responsible for the quality control of medical education. Quality control of education relates to the evaluation of what students have learned (the output). Because the output depends on factors such as the learning processes of students and the input of education (educational means, lectures, teachers etc.), quality control also relates to the evaluation of these two aspects.

Since the publication of the Blueprint in 1994, objectives for undergraduate medical education have been stated. The legislation of a great part of the Blueprint has the consequence that medical schools should control the quality of their medical education in relation to the objectives of the Blueprint. Next to ‘general objectives’ and ‘problems’, the Blueprint requires knowledge of and experiences with ‘discipline-related diseases and skills’. The level of knowledge and experiences of these objectives of the Blueprint can be assessed by several forms of examinations. However, the level of knowledge depends on the possibilities for students to attain this knowledge in daily practice during contacts with patients suffering from these diseases. Without contacts with patients with these diseases, insufficient knowledge and experience will result. Therefore, the medical schools should offer the required diseases to students during the clerkships in order to satisfy the requirements stated in the Blueprint.

The general aim of this thesis is to describe this aspect of quality control of medical education by (1) developing an instrument to register the contacts with patients with specified diseases; (2) determining whether patients with the required diseases are available; (3) stating whether students make use of these available diseases. The environment of the study was one of the clerkships of the Faculty of Medical Sciences of the University of Groningen, more specifically: the clerkship Internal Medicine. The aim of the study as described in Chapter 1 was achieved by:

– a study which evaluates to what extent the theory of the national Blueprint matches with the practice of the clerkships (Chapter 2)
– a pilot study with regard to the use of a prototype of an instrument (logbook) to register the diseases experienced by students and the instructions for use (Chapter 3)
– a transformation of the national Blueprint into an instrument to be used to register students’ experiences with diseases during a clerkship (Chapter 4)
– a study to evaluate whether a department offers medical students sufficient possibilities in order to gain experiences with the required diseases (Chapter 5)
– a study to evaluate to what extent students have experiences with the diseases present at a department (Chapter 6)
– a study to compare students’ experiences in a university and in a community hospital (Chapter 7).

Chapter 2 is the starting point for the study. The comparison of the theory of the national objectives as set in the Blueprint with the experiences of students during six clerkships in Groningen is described. A total of 240 logbooks (40 per clerkship) completed by students were analyzed; the number (percentage) of diseases and skills experienced by the total group of students was counted, and also the mean number (percentage) of experiences with diseases and skills per student. It was found that during the clerkships the objectives of the Blueprint were not completely met. There are correspondences, but also differences between the requirements of the Blueprint and the experiences during the clerkships. The percentage of diseases and skills mentioned by the Blueprint and experienced by the group of students varies per clerkship from respectively 36% (Psychiatry) to 64% (Neurology) and from 53% (Surgery, Gynecology/Obstetrics) to 78% (Pediatrics). By looking at the individual student, it is more obvious that the requirements of the Blueprint are not met. On the other hand, students are confronted with many aspects that are not formulated as a requirement by the Blueprint. In other words: students had experiences with diseases and skills of the Blueprint (overlap), but students also spent time on aspects which are not relevant according to the Blueprint (surplus), while the student did not get around to some requirements (deficit). To make the educational contents of the clerkships more concordant with the
objectives of the Blueprint, the content of the clerkships should be tuned to the objectives of the Blueprint.

In Chapter 3 the results of a pilot study with regard to the use of a prototype of a logbook as an evaluation instrument are described. The aim of this pilot study was to determine in which setting logbooks should be completed in order to obtain accurate information about the learning experiences of students. Three conditions under which logbooks can be completed were investigated: (1) at the end of the clerkship without supervision; (2) daily during the clerkship without supervision; (3) daily during the clerkship with supervision. The mean number of diseases registered in each condition was calculated, and an analysis of variance was done to test for differences. The overall result of this study was that students in each condition registered a broad exposure to the diseases in Internal Medicine, but they differ significantly in the number of diseases experienced (mean number of diseases in: condition 1 = 78.3; condition 2 = 42.2; condition 3 = 54.9). The differences are significant (p=.00). We conclude that it makes a difference whether the logbook is completed at the end or during the clerkship and with or without supervision. Therefore, it seems important to take these factors into consideration when logbooks are used to get insight into the learning experiences of students and to evaluate whether the objectives described in the logbook are met. Based on the results of this pilot study we consider the condition ‘filling out logbooks daily during the clerkship with supervision’ as the optimal condition to attain accurate information about what students really experience in practice.

In Chapter 4 the construction of a logbook is described. The aim of this study was to develop an instrument in order to evaluate the quality of medical education related to the requirements of the national Blueprint. The instrument developed is a logbook which is translated from the Blueprint. The logbook consists of a list of 231 diseases related to Internal Medicine which students must encounter during the clerkship. Because the diseases should be encountered during a twelve week clerkship, the number of the diseases has been decreased by clustering and by defining requirements. Diseases with similar symptomatology and pathogenesis are clustered together, and in each cluster at least one disease is indicated as relevant to be learned. These relevant
diseases are distinguished in 'core' and 'optional' diseases; the 'core' diseases number 37 in total and students should experience all of them. From the 'optional' diseases students must encounter 65 out of a collection of 194. Students will be asked to complete the logbook by making records of the diseases they have encountered. Thus, the logbook gives insight into students’ learning experiences and functions as an evaluation tool. Because the logbook states the kind of diseases that students must encounter, it can also be used as a guideline to students. It is concluded that the logbook is a good starting-point to evaluate whether students meet the diseases of the Blueprint related to the discipline Internal Medicine.

In Chapter 5 the results are mentioned of a study to examine whether the inpatient department of Internal Medicine can offer students sufficient diseases during two four-week periods of the clerkship so that the required diseases related to Internal Medicine as described in our logbook can be met. At five subdivisions, medical doctors recorded the diseases available for students. The overall finding was that a wide variation of the required diseases is offered to the students, but that there are differences between the subdivisions. The general subdivisions offer a greater diversity of diseases than the specialist-oriented subdivisions. Of the 37 ‘core diseases’ students may be expected to encounter during one four-week stay at the department: 57% at Internal Medicine-I; 55% at Internal Medicine-II; 47% at Nephrology; 41% at Respiratory Medicine; 13% at Oncology. Of the 65 ‘optional’ diseases the percentage of diseases encountered is respectively: 78%; 57%; 41%; 34%; 33%. In this study it was also shown that diseases are available within the departments that are not related to the requirements of Internal Medicine but to another discipline. Moreover, diseases are offered which are not relevant to be learned. It is concluded that there are sufficient diseases available at the department in order to meet the requirements, but this goal can only be reached on the condition that the clerkship comprises a stay at a general subdivision and at a specialist-oriented subdivision.

Chapter 6 reports whether doctors (considered as the golden standard) and students record the same data (with respect to diseases) in the logbook when they use the same logbook at the same department during the same time. The
aim of this study was to determine to what extent students encounter the diseases available at a department. Interobserver agreement, expressed by the coefficient of Jaccard (J) was calculated. To assess the kind of errors which students made, sensitivity and specificity were determined. We have found that the logbook data of doctors and students are not fully consistent (mean J for the complete set of diseases .23 and for the ‘core’ diseases .36). Students made two types of errors when they fill out the logbook. Firstly, they record false identifications in the logbook (mean specificity for the complete set of diseases and for the 'core' diseases is .96 and .93, respectively); secondly, they do not record all the diseases available at the department (mean sensitivity for the complete set of diseases is .36 and for the 'core' diseases .51). We conclude that students do not make full use of the diseases available at the department. Thus, logbook data recorded by the students themselves are not indicative for what actually happens in practice, but may be indicative for what students have learned. It is suggested that the accuracy and the quality of these data can be improved by supervision and feedback given by teachers and coaches.

In Chapter 7 attention is given to the logbook records of students about their experiences with diseases in the university hospital and in the community hospitals. A total of 111 completed logbooks were analyzed; the percentage of students that achieved the complete set of required diseases and the mean number of experiences with the diseases was calculated. It was found that during the clerkship students have experienced a broad range of the diseases, which means that students attained a wide overview of diseases in Internal Medicine. In the university as well as in the community hospital there are many students who are not achieving the complete set of requirements, but the gap between what students have experienced and what they should experience is smaller in the community hospital than in the university hospital (p < .05, t-test). To promote that all our students meet the required learning experiences, both hospitals should match their educational programme.

In Chapter 8 an overview is given with respect to some aspects of the quality control of medical education. When defining the quality of education, the main issue concerns the educational output: what have students learned. However, this output is influenced by the input provided by medical schools and the
learning processes of students. To get an impression of the quality of education, this study evaluates just one aspect of the input, namely the diseases. Therefore it is stressed that evaluation of more input variables and of the learning processes of students is also important in order to define the quality of education. This means that medical faculties should put more efforts into the development of several evaluation instruments, and into the use of these instruments to determine the quality of educational input- and process-variables in order to optimize the educational output and to satisfy the requirements of the Blueprint.