Evaluating clinicians’ teaching performance
Boerebach, B.C.M.

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CHAPTER 1

GENERAL INTRODUCTION

Benjamin C.M. Boerebach
INTRODUCTION

This thesis is about clinicians’ teaching performance in postgraduate medical education in the Netherlands. In this introductory chapter the key elements and terms used throughout this thesis will be defined and explained. The chapters of this thesis are published in (or submitted to) different scientific journals. Since the journals have different styles and readership, the discourse and terminology that are common in the (target) journals have been used. Therefore, some of the key terms differ between chapters. This introductory chapter will subsequently discuss the setting of postgraduate medical training, the role of clinician teachers, their teaching performance, and the learning of trainees through role modeling. At the end of this introductory chapter, the overall and specific aims of the subsequent chapters are described.

POSTGRADUATE MEDICAL TRAINING

Setting

We conducted our research at postgraduate medical training programs (also referred to as residency training programs) in the Netherlands. The major purpose of postgraduate medical training is to train junior medical doctors to become medical specialists. The trainees in postgraduate medical training (also referred to as residents) have already obtained a degree in medicine (M.D.) and are thus qualified to practice medicine independently.

In the Netherlands, 27 specialties are accredited to deliver specialty specific training in a hospital setting.1 Besides, there are training programs in family medicine, nursing home medicine and social medicine that have (slightly) different settings and are directed by different regulations; those programs are not included in this research.

Each hospital based training program lasts 4 to 6 years, mainly consists of work based leaning and is coordinated by one academic hospital. The trainees follow an individual modular training schedule covering both their main
specialty and various subspecialties. During their training, trainees work at
different departments in various academic and non-academic teaching hos-
pitals. This design is comparable to training settings in several other west-
ern countries including Canada and many European countries (such as the
United Kingdom, Germany and Denmark).

Quality Management

During the last decade, there has been an increased awareness about quality
management in postgraduate medical training. One of the immediate causes
for this increase was the 2005 call by the Dutch Ministry of Health stating that
they aimed to change from the history-based allocation of medical trainees
towards a more quality-based allocation. This competitive incentive, which
has not been fully operationalized yet, led to nationwide discussions about
quality indicators for postgraduate medical training. These nationwide dis-
cussions were soon linked to and fuelled by international quality manage-
ment development in postgraduate medical education. Among others, the
American Accreditation Council for Graduate Medical Education (ACGME)
competencies, the Canadian Medical Education Directions for Specialist
(CanMEDS) framework and the British Graduate Medical Council’s docu-
ment Tomorrow’s Doctors were studied as information sources for defining
training competencies and regulations across training programs in the Neth-
erlands.

Somewhat later, in 2011, the CGS (Dutch College for Medical Specialties),
the responsible body for determining all regulations for postgraduate medi-
cal education, introduced competency-based regulations which were main-
ly based on, and therefore highly similar to, the CanMEDS framework. All
regulations were formalized in a document called the Kaderbesluit CCMS.
These regulations are monitored by a registration committee (called RGS)
which is independent of the CGS and provides legitimization and accredita-
tion of all postgraduate training programs in the Netherlands.

The competitive incentive and the subsequent discussion about quality
management in postgraduate medical education also resulted in the estab-
ishment of a study committee, called Committee Scherpbier after its chair,
which was asked to advise the Ministry of Health about potential quality indicators for use in the evaluation of training programs’ performance. After an extensive study, the committee concluded that there were no simple valid quality indicators available yet. The committee did present a toolkit of available evaluation instruments that could be used to evaluate different quality domains. Some of these instruments focused on the performance of the individual clinician teachers.

CLINICIAN TEACHERS

In the Netherlands, training and supervision of trainees are the joint responsibilities of all attending clinicians who practice medicine at the training department. These clinician teachers are also referred to as faculty, attending physicians or surgeons (when they practice a surgical specialty), supervisors, or clinicians. According to the CGS regulations, all clinician teachers are obliged to provide high quality competency-based training, including (but not limited to) creating a safe learning climate for trainees, providing regular and constructive feedback and acting as a role model. Each program is led by a formal program director, who is appointed by the RGS. The program director is responsible for executing the formal training regulations, to oversee the quality of training and to handle and solve problems and conflicts concerning the training program.

Nowadays, trainees are more in control of their training and have to acquire different competencies at different internships in both general and academic teaching hospitals. Consequently, trainees are no longer uniquely tied to one clinician teacher for a long period, as was the case in the traditional master-apprentice model. The shift in educational structure - from master-apprentice to the current competency-based “modern medical education” structure - impacted methods and procedures that clinician teachers could use to teach trainees. For instance, because trainees are no longer supervised by one clinician teacher (as in the traditional master-apprentice model), there is no single clinician teacher who knows all trainees’ capabilities well after training them over the years and can assess trainees’ competencies
and performance. Therefore, all clinician teachers involved in the training of a trainee over the years are now jointly responsible for assessing whether a trainee successfully acquired all competencies needed to proceed or complete postgraduate training.

**TEACHING PERFORMANCE**

The performance of clinician teachers is assumed to be essential for high quality medical training. In the following chapters, clinicians’ teaching performance will be investigated from different perspectives. In this introductory chapter, teaching performance and the evaluations of teaching performance are introduced and defined.

*Teaching performance and teaching effectiveness*

In the literature on teaching qualities of individual clinician teachers, the terms *teaching performance* and *teaching effectiveness* are used interchangeably. According to the Oxford dictionary, performance and effectiveness are not synonyms. Performance is defined as ‘the action or process of performing a task or function’ and effectiveness as ‘the degree to which something is successful in producing a desired result; success’. Effectiveness includes a *desired result* that can be achieved by highly effective clinicians. The most obvious desired result of medical training will be the trainees achieving excellent healthcare delivery, both during training and after completion of training. Although this will certainly remain the most important result of medical training, it seems inefficient to include it as a quality indicator for clinicians’ effectiveness. First, frameworks on what excellent healthcare delivery encompasses are very comprehensive and complex, making healthcare delivery difficult to assess. Second, even if the quality of healthcare delivery by medical trainees could be assessed over a given time frame, the complex process of medical education involving multiple clinician teachers and other stakeholders would make a causal claim between clinicians’ teaching and enhanced health care practice by trainees elusive. It seems therefore justifiable to omit the healthcare practice by trainees as a quality indicator for
As mentioned above, performance refers to performed actions. These actions can be influenced by many factors including knowledge, attitudes, the environment, and individuals emotional and physical state. Although these factors may influence performance, performance itself refers to the actually performed actions or behaviors. Good teaching performance includes clinicians’ use of specific actions or teaching behaviors that are assumed to facilitate the learning of trainees, thereby contributing to the quality of clinicians’ teaching. Some teaching behaviors are often mentioned by trainees as facilitators for learning, making them potentially valid teaching performance indicators. These behaviors include (but are not limited to) providing relevant biomedical information during procedures, listening to trainees, encouraging trainees to participate actively, and providing direct and constructive feedback. Given the reasons described above, the term teaching performance seems to be the most appropriate term when referring to the quality of teaching of individual clinicians. Therefore, we will continue using the term performance.

**Performance evaluation and assessment**

There are several methods that can be used to evaluate clinicians’ teaching performance, isolated or combined. First, observations of clinicians interactions with trainees, either direct or through video recordings, can be used to evaluate clinicians’ performance. In practice, observations are sometimes used for training and faculty development purposes and can be insightful and useful for these purposes. However, to obtain a reliable evaluation of clinicians performance, observations are often time and resource consuming and in clinical settings sometimes impractical.

A more practical and less time consuming method to evaluate clinicians’ teaching performance is performance evaluation through the feedback of medical trainees, peers or clinicians themselves. Trainees or peers can be asked to evaluate clinician teachers’ use of specific teaching behaviors. In this thesis, we will focus on this method to obtain trainee and self-evaluations of clinicians’ teaching performance.
In clinical performance evaluations, several other methods are used to evaluate clinicians’ performance in addition to observations and feedback. These include structured facilitated self-reflections (appraisals), audits of medical records and simulated patient visits.\textsuperscript{12} Although these methods, or similar methods such as simulated students and audits of trainees’ feedback or assessment document, may be a valuable alternative to evaluate clinicians’ teaching performance, there are no studies that explored the use of these methods to evaluate teaching performance.

**Purpose of teaching performance evaluations**

The evaluations of clinicians’ performance are also called assessments of performance. Although these terms are sometimes used interchangeably, they differ in the purpose of measurement. Mostly, evaluations are used formatively, while assessments refer to a summative activity.\textsuperscript{16} Formative evaluations are used to provide clinicians with information to guide their future professional development by exploring learning needs, abilities and previous performance. Formative evaluations are supposed to yield rich, detailed and specific performance information that can help clinicians in developing their teaching qualities. Summative assessments are performed to make a judgment about someone’s skills or performance for the purpose of job promotion or the assessment of fitness to practice or teach. The main outcome of summative assessments is usually a judgmental rating (insufficient, sufficient, good, excellent or go/no-go or fit/unfit). In the context of our research we focus on teaching performance evaluations for formative purposes.

According to the humanist theory of learning, that theorizes the learning processes of adults, the progress of learning and development of individuals can been described as a *hierarchy of motivation*; once individuals basic needs are fulfilled, learning is described as personal growth and focuses on personal goals and accomplishments, requires reflection, and is self-directed.\textsuperscript{17} The self-directed element of learning is also embraced by medical sociologist Freidson in his theory on quality management by autonomous medical professionals.\textsuperscript{18}
A theoretical model that will be used to guide the formative, self-directed performance evaluations and explain the findings of empirical studies further on in this thesis, is the informed self-assessment model.¹⁹ This model assumes that clinicians will use self-directed and self-regulated learning to guide their continuous lifelong learning. The informed self-assessment model suggests that humans are unable to self-assess their performance accurately without external data (i.e. unguided self-assessments rarely match observed assessments of behaviors).¹⁹-²¹ In the model, the process of informed self-assessment is described as a flexible and dynamic process of accessing, interpreting, and responding to varied external and internal data (Figure 1).¹⁹ Formative performance evaluations can yield external data and facilitate the explication of internal data, to help clinicians in the process of informed self-assessment. More information about the model is published elsewhere.¹⁹,²²-²⁴

**Figure 1** Processes and dimensions of informed self-assessment (from Sargeant et al., 2010, copyright reserved)
ROLE MODELING

Role modeling is a process which clinician teachers can use to demonstrate clinical skills, model and articulate expert thought processes and manifest positive professional characteristics. Because a large part of the expertise and knowledge that is acquired by trainees results from observing and imitating more experienced clinicians, role modeling is regarded as an important teaching strategy. According to Hafferty (1998), role modeling takes place in three clinical learning situations; the formal, informal and hidden curriculum. Clinicians can use their role modeling as a conscious teaching strategy or they may be unaware of the possible effects of role modeling when trainees observe, work with and learn from them. There have been several studies that explored which attributes and characteristics of clinicians impact their role model status as perceived by trainees. These studies have been summarized in two systematic reviews. Shortly, clinicians’ attributes can be categorized into clinical qualities, teaching qualities and personal qualities. Clinical qualities include effective diagnostic and therapeutic skills, up-to-date knowledge, being compassionate, caring, engaging and empathic to patients, and displaying respect and giving recognition to other health care workers. Teaching qualities include enthusiasm for teaching, stimulating critical thinking, being accessible and making time available for trainees, and giving trainees autonomy. Personal qualities include integrity, effective leadership style, self-confidence, dedication and honesty. A more comprehensive overview of clinicians’ attributes can be found elsewhere.

Although there seems to be sufficient knowledge on which factors trainees appreciate in their role models, there is little knowledge on the consequences of role modeling and on the changeability of clinicians’ role model status. In this thesis we will explore if clinicians’ can enhance their role modeling by altering their teaching performance.
AIM OF THIS THESIS

Two overall aims

This thesis has two overall aims. The first aim is to gain a better understanding of how we can validly and reliably evaluate clinicians’ teaching performance at a point-in-time and changes in their teaching performance over time. As stated before, formative evaluations of clinicians’ teaching performance are believed to help clinicians in enhancing their teaching performance. This theses aims to study the validity and reliability of the teaching performance evaluations generated through the System for Evaluations of Teaching Qualities (SETQ), a system developed to evaluate clinicians’ teaching performance, which is widely used across the Netherlands.32–34

Secondly, we aim to explore if and how trainees’ perception of clinicians’ teaching performance can impact clinicians’ role modeling. Knowledge about tools that clinicians can use to enhance their role modeling is scarce. It is largely unknown which behaviors of clinicians can impact which aspects of their role modeling. Therefore, this thesis aims to explore the impact that certain teaching performance domains can have on the role model status of clinicians.

Research questions

To address the two general aims described above, several research questions are posed and answered throughout this thesis. An overview of the research questions that are addressed in the subsequent chapters is presented in table 1.

Chapters 2 and 3 will provide an assessment of the validity and reliability of the SETQ tools for evaluating clinicians’ teaching performance. In these chapters, the psychometric properties of the trainees-evaluations, as well as the self-evaluation of clinicians’ teaching performance are assessed. In chapters 4 and 5 we present two studies that explore whether teaching performance of clinicians, as evaluated through the SETQ tools, changes once a cycle of evaluation, reporting and feeding back have been completed. In chapter 6, we critically appraise the performance evaluation scores that were
studied in chapters 4 and 5 and discuss how to assess if clinicians improved or declined their performance. Chapters 7 and 8 study the impact of specific aspects of clinicians’ teaching performance on them being seen as role models by trainees. Finally, a general discussion is included in chapter 9.

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<th>Chapter</th>
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| 2       | Measures of teaching performance       | Psychometric (validation) study  | i) How valid and reliable are the newly implemented surgical SETQ tools measuring surgeons’ teaching performance?  
                                      |                                        |                                                                                     | ii) Do surgeons and trainees have similar perceptions of surgeons’ teaching performance? |
| 3       | Measures of teaching performance       | Psychometric (validation) study  | i) How valid and reliable are the SETQ tools for measuring clinicians’ teaching performance across specialties and centers, seven years after their initial introduction? |
| 4       | Evaluating clinicians’ teaching performance change | Prospective cohort study | i) Do numerical and narrative feedback provided to clinicians influence trainees’ perception of clinicians’ teaching performance improvement one year later?  
                                      |                                        |                                                                                     | ii) Does the completion of a self-evaluation by clinicians influence trainees’ perception of clinicians’ teaching performance improvement one year later? |
| 5 | Evaluating clinicians’ teaching performance change | Prospective cohort study | i) How do trainee-evaluations and self-evaluations of clinicians’ teaching performance evolve after two cycles of evaluation, reporting and feedback?  

ii) Does over- or underestimating own performance influence trainee- and self-evaluations of clinicians’ subsequent teaching performance one year later? |
| 6 | Assessing performance improvement | Critical appraisal and methodological discussion | i) How valid are the performance change measures currently used to assess performance improvement?  

ii) How do methodological concerns and choices impact the assessment of performance change? |
| 7 | Teaching performance and role modeling | Retrospective study | i) How does clinicians’ teaching performance influence their role modeling?  

ii) Does clinicians’ teaching performance influence their role modeling similarly across specialties? |
| 8 | Teaching performance and role modeling | Retrospective study | i) What are the potential causal relationships between clinicians’ teaching performance and their role modeling?  

ii) How do these different causal assumptions impact the estimation and interpretation of the associations between clinicians’ teaching performance and their role modeling? |
| 9 | Evaluating teaching performance and role modeling | General discussion | i) How can the knowledge generated in this thesis inform theory and practice?  

ii) What are the implications of this research for future practice and research? |
REFERENCES


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