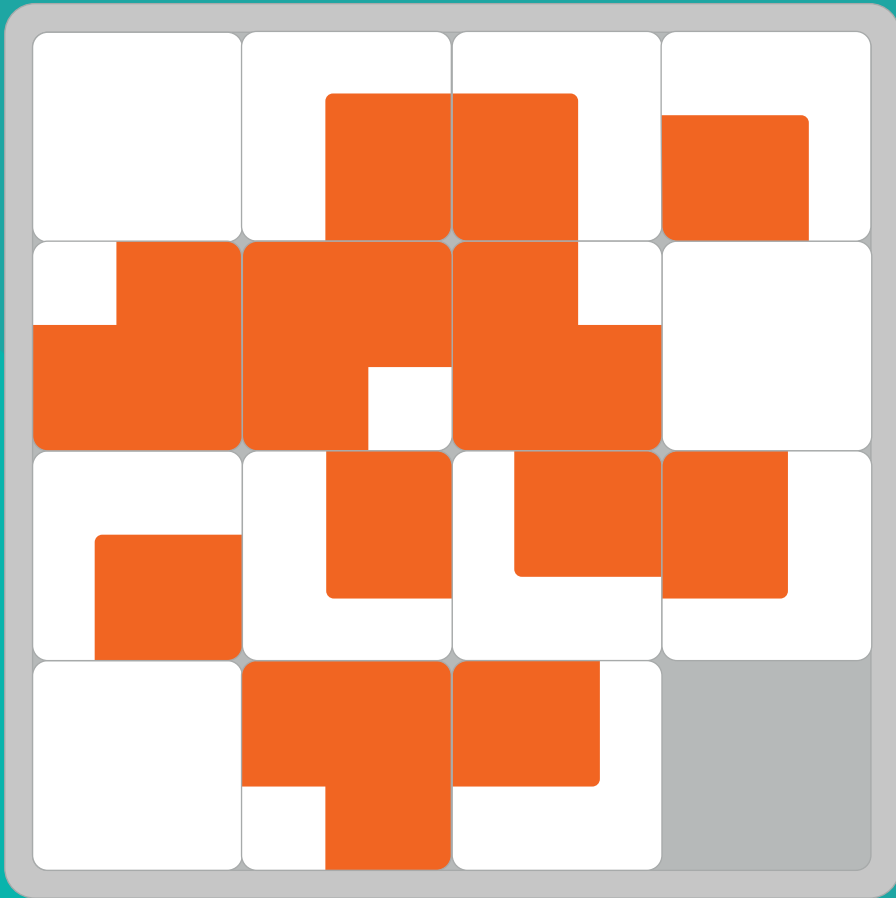


CLINICAL WORKPLACE LEARNING TODAY



How competency frameworks inform clinical
workplace learning (and how they do not)

Nienke Renting

Clinical workplace learning today

How competency frameworks inform clinical workplace learning
(and how they do not)



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Clinical workplace learning today

How competency frameworks inform clinical workplace learning
(and how they do not)

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Clinical Workplace Learning Today

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The studies presented in this thesis were carried out at the Graduate School for Health Research, SHARE, of the University of Groningen.

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Chapter 1

General Introduction

General Introduction

“Knowledge is rarely a problem. As a physician, you are not only, let’s say, a physician. You also have to engage with society and science. You have to be cooperative and communicative. It is not something one just teaches... It is something you gradually become.”

Clinical supervisor

1

The rationale for this thesis

The purpose of medical education is to benefit patients by improving the work of physicians. In traditional curricula, the emphasis is mainly placed on knowledge acquisition, whereas, as illustrated by the clinical supervisor’s quote above, skills and attitudes are also highly relevant for physician’s performance in practice (Frank et al., 2010; Talbot, 2004). Although medical education has enjoyed many successes over the last century, there is a recognition that medical education systems are not producing physicians with the abilities needed to meet the complexities of modern practice. Increasing societal and professional concerns about errors in diagnosis and treatment, communication breakdowns, poor care coordination, inappropriate use of tests and procedures and dysfunctional collaboration created momentum to transform medical education to adopt competency-based philosophies (Kohn, et al., 2000; Xyrichis & Ream, 2008).

Competency frameworks, in which important professional skills and attitudes are made explicit, have become the foundation for many medical curricula around the world. By synthesising knowledge, skills, and attitudes, competency frameworks define ultimate learning outcomes in terms of what physicians should be able to do, aiming to prepare physicians better for their professional practice. The medical education competency frameworks such as CanMEDS, Good Medical Practice, and ACGME, have in common that they are developed with considerable stakeholder input to firmly reflect what society wants our physicians to be (ACGME, 2013; Frank, 2005; GMC, 2013).

The medical education competency frameworks are strikingly similar, which further supports their robustness. They all make aspects of the profession explicit that were previously only treated implicitly. They all emphasise skills beyond the knowledge domain: according to these frameworks, physicians have to be compassionate and communicative and able to reflect on their actions. They have to act professionally and collaborate well with other professionals. Interestingly, multiple review studies show how improved performance in those domains correlates with a higher quality of care (Dietz et al., 2014; Kuenzle et al., 2010; Schmutz & Manser, 2013). Herewith, the promise of competency-based medical education is supported: improving health care by promoting relevant skills and attitudes for

medical training. CanMEDS' slogan 'Better standards. Better Physicians. Better Care', explicitly emphasises the assumption that defining ultimate learning outcomes leads to improved care (Frank, 2005).

As the momentum of competency-based medical education reforms increased, so have criticisms of the movement. The effectiveness of competency-based education, like any other educational innovation, depends mainly on the way the defined competencies are operationalised and addressed in training programmes. Medical training, especially postgraduate, largely takes place in the clinical workplace where residents treat patients under the supervision of medical specialists. Workplace learning is critical for becoming a medical professional (Teunissen, 2014), but as learning environments, clinical workplaces are unruly. Residents may miss learning opportunities that the clinical environment affords, due to this lack of pedagogical structure (Billett, 2002). Theoretically, competency frameworks explicate what is expected, and therefore provide more pedagogical structure to the clinical environment to make it more conducive to residents' learning. Practically, it appears to be difficult to explicitly address *all* defined competencies in this setting. While medical knowledge logically receives dominant attention during assessment and feedback, 'difficult' competencies such as professionalism, collaboration, and health advocacy remain underexposed (Bandiera & Lendrum, 2008; Chou et al., 2008; Ginsburg et al., 2011). It remains a challenge to incorporate all CanMEDS roles optimally into comprehensive medical training (ten Cate & Scheele, 2007; van der Lee et al., 2013). Alarming, studies have shown that starting medical specialists who participated in competency-based curricula often feel insufficiently prepared in areas outside of the role of Medical Expert (Card et al., 2006; Dijkstra et al., 2015).

Furthermore, concerns have been raised about unintended and undesirable consequences of competency-based models. Possibly most problematic is the notion that a competency is something one can check off, instead of an area of continuous professionalisation (Ginsburg 2010). Focusing on a determination of 'competent', as an end goal instead of an ongoing professionalisation effort, contributes to assessment protocols being seen as hurdles that one simply needs to get over (Lombarts, 2015). This implicit assumption might remove any incentive to pursue continuous growth and excellence (Eva, 2016; Lombarts, 2015). Another possible issue with the way competency-based education is implemented in medical education may be that it relies highly on medical specialists, who themselves have not been trained in these areas, to make the framework's competencies explicit during supervision (Cleland et al., 2008). Finally, objections have been raised against defining the complex medical profession into terms of measurable outcomes. Competency frameworks have been called an oversimplification of reality, not doing justice to the reality of the complexity of practice

(Whitehead, 2013). Whether and how these conceptual concerns affect practice-based learning, however, remains largely unknown. This thesis was set out to explore promises and pitfalls of competency-based education, by exploring how a postgraduate programme informed by the CanMEDS framework actually operates in practice.

Context

The CanMEDS framework is the most widely adopted framework for medical education. The Canadian Royal College developed the framework in the 1990s based on broad and extensive stakeholder input and empirical research. It has been implemented in many undergraduate curricula and postgraduate training programmes around the world. The framework is continuously evaluated and renewed, and updated versions of the framework have been published in 2005 and



Figure 1. CanMEDS framework

2015. CanMEDS comprises seven professional roles. Medical Expert is the central role that draws on six peripheral, intrinsic, roles: Communicator, Collaborator, Leader (former Manager), Professional, Health Advocate and Scholar. For each role, detailed descriptions of the roles' underlying skills and attributes are described. The studies for this thesis were conducted within the context of internal medicine residency training in the Netherlands. The CanMEDS framework has been adopted in internal medicine residency training on a national level since 2009. The framework was slightly modified to fit the local context of the profession better; the role of Professional was renamed into Reflective Professional and placed at the heart of the flower-shaped visual representation (Gans, 2009).

In the Netherlands, medical students follow a three-year bachelor programme and a subsequent three-year master programme with clinical clerkships. Afterwards, they can choose to further specialise themselves during postgraduate training in one of the disciplines, such as internal medicine. Typically, graduates take a gap year during which they work in the hospital, to gain some experience, before applying for a postgraduate programme of their choosing. Internal medicine postgraduate training is a six-year programme. The University Medical Centre Groningen collaborates closely with seven affiliated (peripheral) teaching hospitals in the north and eastern part of the Netherlands. During their first years, residents are generally located in the peripheral hospitals, whereas during their final years they reside at the University Medical Centre. In all hospitals, residents take on key roles and

responsibilities in health care processes. They care for their own patients admitted to the wards and in outpatient clinics under the supervision of medical specialists. These supervising medical specialists provide them with feedback on their performance. Residents keep a portfolio in which their progress is mapped against the ultimate learning outcomes in terms of CanMEDS roles. Postgraduate training is truly workplace learning; by participating in all aspects of clinical practice, residents learn to take on the different roles of their profession.

Previous Research

Training programmes designed around competency frameworks generally reflect four critical features: a focus on outcomes, an emphasis on abilities, a reduction of emphasis on time-based learning, and promotion of learner-centredness (Frank & Danoff, 2007; Gruppen, 2016). These critical features require competency-based programmes to have solid assessment programmes in order to keep track of learner's performance and stimulate growth. Logically, medical education research has strongly focused on the development of valid and reliable assessment instruments (Hall et al., 2012; Jefferies et al., 2011; Sherbino et al., 2013). Furthermore, a solid assessment programme contributes to learner-centred approaches in curriculum design since it identifies individual learners' strengths and needs. While medical educators initially viewed assessment to dominantly serve to rank students or decide their pass or fail, progressive insights showed that assessment also has the potential to enhance learning (Schuwirth & van der Vleuten, 2004). Previous research in the domain can roughly be considered as stemming from three major theoretical strands; behaviourism, cognitivism, and social learning theories. In the following paragraphs, I will briefly provide an overview of the existing research in these three strands, with relation to resident learning in competency-based medical education (CBME).

Behaviourist learning approach to CBME

Behaviourist approaches acknowledge the directing effects of assessment on learning. This perspective dictates that in order to assure residents develop the defined competencies, they need to be assessed regularly. A variety of assessment instruments to assess clinical competence, such as the OSCE and Mini-CEX were developed (Norcini et al., 2003; Harden & Gleeson, 1997). These instruments have in common that they rely on the judgement of an experienced physician on a set of predetermined standards after directly observing a resident's performance. Although the reliability of this subjective judgement increases by the use of multiple assessors and assessment moments over time, it remains a psychometric challenge to develop reliable assessment instruments for all CanMEDS roles (Wass et al., 2001; Epstein et al., 2007). Arriving at a system of programmatic assessment, in which multiple instruments, each of which cover specific aspects of the defined CanMEDS roles, seems to be the most

viable approach of assessment. Only this approach has the possibility of continuously enhancing learning in the different competency domains (Schuwirth & van der Vleuten, 2011).

Cognitivist learning approach to CBME

Cognitivist approaches to resident learning direct attention towards the importance of feedback on performance. Assessment and direct observation of clinical performance generate opportunities for providing residents with feedback, which is considered to be one of the most powerful learning tools during postgraduate training (Ross, 2012). How and when residents' learning benefits most from this feedback is another area for research within the competency-based medical education domain. An abundance of studies has shown that feedback is only effective when it meets certain quality criteria. It is essential that feedback is provided shortly after direct observation of performance in authentic settings (Yorke 2003; Van Hell et al., 2009; Ramani & Krackov 2012). Furthermore, a single feedback moment should be limited to 2 or 3 topics in order to remain effective (Archer, 2010). The content of feedback should be specific and understandable for the feedback recipient; specific feedback is conducive to performance improvement, whereas general compliments are not (Archer, 2010; Boehler et al., 2006). Providing high-quality feedback is challenging, especially since supervisors have to provide feedback on professional roles that were only taught implicitly during their own training. Faculty development programmes for clinical supervisors are, therefore, considered of major importance for the successful implementation of competency-based education (Holmboe et al., 2011).

Social learning theory approach to CBME

Social learning theories hold that residents' learn first and foremost by participation in the clinical workplace. Theories about workplace learning describe how clinical activities are the starting point for residents' learning. Consequently, processes of interpretation and construction of meaning, during which interactions with others are important, occur (Teunissen et al., 2007; Tynjala, 2013). While behaviourist and cognitivist approaches to learning can draw on a clear link with competency frameworks, this link is less evident from a social learning theory approach. Namely, what residents actually learn may largely depend on busy clinical supervisors who may not be very familiar with the CanMEDS framework. Therefore, essential differences between the curriculum-on-paper and the curriculum-in-action may occur (Dornan et al., 2006). Clinical supervisors appear to have a different, more complex, conception of residents' competence than what is described in the CanMEDS framework (Ginsburg, 2011).

A particularly applicable theory to approach this phenomenon is Wenger's theory of Communities of Practice (1998). This theory views learning as the result of social participation, in this case with patients

and colleagues in the clinical workplace. Therefore, in order for residents to really learn the attributes and values of CanMEDS, they have to be fully adopted by the clinical practice itself. Reasoning from this theoretical perspective, the fact that competency frameworks are generally only used for training purposes might, therefore, inhibit their effectiveness. An unintended consequence of this approach could namely be that residents view CanMEDS roles as only serving training purposes, rather than a reflection of important roles of the actual professional practice. Instead of aiming to improve health care by setting standards for a new generation of practitioners, Communities of Practice theory would direct attention to the way CanMEDS roles are enacted in clinical practice as a whole.

Aim of this thesis

Residents' learning is situated in the clinical workplace, where legitimate participation in real clinical activities is central to learner's development. Mere access to clinical activities is, however, not enough. Residents require deliberate support in order to optimise their experiential learning (Teunissen et al., 2007). Feedback is a vital element of that support and has been strongly endorsed by learners and educators alike as an indispensable element of effective clinical workplace learning (Ende, 1983, Schultz et al., 2004, Cantillon & Sargeant 2008). Although we know that all these separate elements are crucial for workplace learning, it remains unclear how clinical activities, support from supervisors and feedback give shape to competency-based postgraduate training in practice. This thesis aims to provide insight into how postgraduate curricula, informed by CanMEDS, operate in practice. It addresses the following areas:

- Quality and specificity of supervisor's feedback to residents on the different CanMEDS roles;
- Effectiveness of a training session for clinical supervisors on the quality of their feedback to residents;
- The way CanMEDS come to life in the supervisors' feedback;
- How residents' learn CanMEDS roles from participating in clinical practice.

Outline of this thesis

In *Chapter 2*, we describe the development of a formative assessment method that can be used to provide residents with high-quality feedback on the different CanMEDS roles. The major challenge is to shift attention from solely Medical Expert towards the other relatively new roles. We attempt to achieve this by assigning the different CanMEDS roles to different authentic situations.

In *Chapter 3*, we carry out an intervention study in which we engage clinical supervisors in a training session aiming at improving their feedback skills on CanMEDS roles after direct observation of

residents' performance. Quality of feedback was monitored over 2-year a period of time, with a quasi-experimental controlled pre-post measurements design.

In order to actually better prepare residents for their future tasks, it is of importance how the CanMEDS roles come to life during supervisory interactions. In *Chapter 4* we describe a constructivist study in which we use critical discourse tools to analyse what supervisors say in their regular written feedback to residents.

Aside from feedback, residents' training heavily relies on learning through participation in the clinical workplace. The study described in *Chapter 5* is a combined observational and interview study in which we explore how residents learn CanMEDS roles from participating in the clinical practice. This study is set out to better understand how the CanMEDS framework informs postgraduate training and day-to-day supervisory interactions. This grounded theory study draws on sensitising insights from Communities of Practice theory.

Finally, in *Chapter 6*, we summarise and synthesise the results of previous chapters and reflect on their strengths and limitations. We describe how our studies relate to other empirical and theoretical studies, and consider implications for practice and define possible lines for further research.

Since the chapters of this thesis are based on separately published articles, some repetition across chapters was inevitable.

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Chapter 2

A feedback system in residency to evaluate CanMEDS roles and provide high-quality feedback: Exploring its application

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Abstract

Introduction

Residents benefit from regular, high quality feedback on all CanMEDS roles during their training. However, feedback mostly concerns Medical Expert, leaving the other roles behind. A feedback system was developed to guide supervisors in providing feedback on CanMEDS roles. We analyzed whether feedback was provided on the intended roles and explored differences in quality of written feedback.

Methods

In the feedback system, CanMEDS roles were assigned to five authentic situations: Patient Encounter, Morning Report, On-call, CAT, and Oral Presentation. Quality of feedback was operationalized as specificity and inclusion of strengths and improvement points. Differences in specificity between roles were tested with Mann–Whitney U tests with a Bonferroni correction ($\alpha = 0.003$).

Results

Supervisors ($n = 126$) provided residents ($n = 120$) with feedback (591 times). Feedback was provided on the intended roles, most frequently on Scholar (78%) and Communicator (71%); least on Manager (47%), and Collaborator (56%). Strengths (78%) were mentioned more frequently than improvement points (52%), which were lacking in 40% of the feedback on Manager, Professional, and Collaborator. Feedback on Scholar was more frequently ($p = 0.000$) and on Reflective Professional was less frequently ($p = 0.003$) specific.

Discussion and Conclusion

Assigning roles to authentic situations guides supervisors in providing feedback on different CanMEDS roles. We recommend additional supervisor training on how to observe and evaluate the roles.

Introduction

Modern society demands that physicians are not only solely experts in medical knowledge and procedures, but also meet individual patients' needs and collaborate well in an increasingly complex healthcare environment. Consequently, the focus of medical training programs has been shifted from solely medical towards more general competencies (Swing 2007; Frank et al., 2010). Competency frameworks, such as the CanMEDS, have been developed and implemented to guide the design of medical curricula. The CanMEDS framework comprises seven physician's roles. The Medical Expert role is the central role and draws on the competencies included in the six peripheral intrinsic roles Communicator, Collaborator, Manager, Professional, Health Advocate, and Scholar (Frank & Danoff 2007). Despite these educational innovations, starting specialists who have participated in competency-based training often feel insufficiently prepared for the tasks related to and competencies included in the intrinsic roles (Card et al., 2006; Dijkstra et al., 2015). Therefore, it seems to remain a challenge to optimally incorporate the intrinsic CanMEDS roles into comprehensive residency training (ten Cate & Scheele 2007; van der Lee et al., 2013).

In residency, the CanMEDS roles are practiced in a workplace setting where formative feedback after direct observation is a powerful learning tool (Ross et al., 2012). A variety of instruments have been developed to evaluate residents' performance on the CanMEDS roles and to provide them with feedback (Norcini & Burch 2007). However, these instruments tend to generate feedback that is mainly focused on the Medical Expert role, often leaving the intrinsic roles behind (Bandiera & Lendrum 2008; Chou et al., 2008; Ginsburg et al., 2011). In addition, program directors expressed their dissatisfaction with the available evaluation instruments for the intrinsic roles, especially those for the Collaborator, Health Advocate and Manager roles (Chou et al., 2008). In the literature, we found limited suggestions on developing a comprehensive feedback system in which the different roles are incorporated and evaluated on a regular basis.

When developing such a formative feedback system, general standards for effective feedback have to be taken into account. Feedback in workplace settings is most valuable when it is provided after direct observation of performance in authentic situations (Yorke 2003; Van Hell et al., 2009; Ramani & Krackov 2012). To optimally develop the versatile CanMEDS roles, it is important that feedback focuses on different competencies included in each role. Therefore, the roles should be evaluated in different contexts (Scheele et al., 2008). For example, in the Communicator role, other competencies will be addressed in patient encounters than those addressed in oral presentations. In order to be effective,

feedback has to contain limited topics per feedback moment (Archer, 2010). To ensure high-quality, feedback has to contain both strengths and suggestions for improvement, as it is important for learners to understand what went well or wrong, why it went well or wrong and how their performance can be improved (Hewson & Little 1998; Archer 2010). Furthermore, the content of the feedback should be presented in a way that is concrete and understandable for the feedback recipient; specific feedback is conducive to performance improvement, whereas general compliments are not (Archer 2010; Boehler et al., 2006). Finally, feedback should be systematically delivered, preferably multiple sources over time (Veloski et al., 2006). Taking into account, the above-mentioned pre-requisites for effective feedback, we developed a structured feedback system intended to provide residents with high quality feedback on CanMEDS roles.

This study presents the design of feedback system and explores its application through the following research questions:

1. Does a feedback system – in which the most salient CanMEDS roles of an authentic situation are predetermined for evaluation – generate feedback on all intended roles?
2. Does the quality of written feedback on different CanMEDS roles meet criteria for effective feedback as described in the literature?
 - a. Does it contain both strengths and suggestions for improvement?
 - b. Is the written feedback specific?

Methods

Design of the feedback system

In order to structure feedback to residents in such a way that different CanMEDS roles are covered, we developed a formative feedback system in which the two or three most salient roles of an authentic situation were predefined and evaluated.

The feedback system was based on the main principles of effective feedback in workplace settings as described in the introduction section: (1) the feedback should be provided after direct observation, (2) the CanMEDS roles should be observed in different authentic workplace settings, (3) the feedback should contain a limited number of topics per feedback moment, (4) feedback should contain both strengths and suggestions for improvement, (5) be specific, and (6) delivered from multiple sources over time.

Initial steps in developing the feedback system were as follows:

1. Experienced internal medicine program directors defined five authentic situations that were appropriate for observing and evaluating residents' performance: Patient encounter, Morning report, On-call, Critical Appraisal of a Topic (CAT), and Oral presentation.
2. For each of the five situations, they determined the 2–4 most salient CanMEDS roles that had to be evaluated (Table 1).
3. To focus the feedback and limit the feedback topics per role, they selected one core competency per role that had to be observed.
4. Five different situation-specific forms were developed on which the CanMEDS roles and their underlying core competencies were preprinted. To focus the feedback and increase its quality, specific space was created for strengths and suggestions for improvement per role and this space was limited to force supervisors to be specific (Figure 1).

All supervisors could give feedback to all residents in the same department. As an example, Figure 1 shows the feedback form designed for the authentic situation of working a weekend On-call.

Participants were instructed that residents should receive feedback from as many supervisors as possible throughout their training. Supervisors were instructed to engage the residents in feedback conversations and to write down the main points using the pre-printed form. The feedback system was strictly designed for formative assessment to improve residents' learning and was solely used as input for semi-annual evaluation meetings with their program director. Residents were expected to have at least 12 feedback forms in their portfolio at the end of a year. To inform the residents about their performance without giving a summative judgment by indicating that their performance was sufficient or insufficient, the feedback forms contained a criterion-referenced scale for each role. Supervisors could indicate residents' level of performance in terms of above, at or below the norm of what can be expected from residents according to their stage in training.

Table 1. Description of the five selected authentic situations and rationale for the assigned CanMEDS roles.

Patient encounter	Situation: Resident works directly with a patient in the medical ward or outpatient clinic. Roles: The <i>Medical Expert</i> and <i>Communicator</i> roles are assigned since diagnostic/treatment abilities and communicating with patients are the most salient in patient encounters.
On-call	Situation: Resident is on-call during the weekend and, therefore, responsible for emergency consultations and patient care on the ward. This form is used to evaluate how the resident manages being on call during the weekend, but is not meant to be used for individual patient encounters. Roles: The <i>Manager</i> and <i>Collaborator</i> roles are the most salient. <i>Communicator</i> is added to evaluate communication with colleagues and other staff; <i>Reflective Professional</i> is included to evaluate professional behavior.
Morning report	Situation: Resident led patient handover during morning reports: the patients are being handed over from one shift to another. Roles: The <i>Communicator</i> role is the most salient, because good communication is a prerequisite for the effectivity of morning reports. <i>Collaborator</i> is added, because delegation of tasks and discussing patient problems with colleagues pertain to morning reports. <i>Reflective Professional</i> is considered important during morning reports, because residents have to know what and why they did what they did in order to be able to hand over information.
Critical appraisal of a topic (CAT)	Situation: The resident formulates a search question to solve a patient problem that arises from practice. Results of the literature search are presented to colleagues and implemented in patient care. Roles: <i>Scholar</i> is the most salient role to evaluate the residents' evidence-based practice and insights. <i>Communicator</i> is added to evaluate the resident's oral presentation of his research and the discussion he had with colleagues after the presentation. <i>Reflective Professional</i> is included to evaluate the resident's level of reflective practice when judging literature and making professional choices regarding this patient, or future patient care.
Oral presentation	Situation: The resident presents a relevant research paper from literature to his colleagues. The article is discussed in the context of what is already known about the topic. It is very similar to a CAT, but is not directly related to a specific patient problem. Roles: The <i>Scholar</i>, <i>Communicator</i>, and <i>Reflective Professional</i> roles are on this form for the same reasons they are on the CAT form.

I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
1			2			3			4			5			6		

Name Resident: _____ **Supervisor:** _____ **Date:** _____

On-Call

Com

1

2

3

4

5

6

Oral and written reporting of patient cases
What went well?

What can be improved?

Man

1

2

3

4

5

6

Works efficiently and goal-oriented in a healthcare organization
What went well?

What can be improved?

Col

1

2

3

4

5

6

Contributes to effective interdisciplinary care
What went well?

What can be improved?

RP

1

2

3

4

5

6

Is able to reflect on own behavior, alone and with others
What went well?

What can be improved?

Signature resident: _____

Signature supervisor: _____

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Figure 1. An example of the feedback form for On-call.

Design of the study

Context

The Dutch Internal Medicine Association adopted the CanMEDS framework in residency training. The framework had been slightly modified by changing the Professional into Reflective Professional (Gans 2009), but had similar learning objectives. This study was conducted at the Department of Internal Medicine of the University Medical Center Groningen, The Netherlands. Residency training lasts 6 years and takes place at the University Medical Center and seven affiliated teaching hospitals. At the time of this study was conducted, a training session on how to provide effective feedback according to Pendleton's rules (Pendleton et al., 1984) had already been offered to the supervisors in these hospitals, as part of regular faculty training.

Participants and procedures

All internal medicine residents in the first three years of postgraduate training and their supervisors were informed about the purpose of the study and invited to participate. Participation was voluntary and anonymous. Both supervisors and residents were instructed on how and when to use the feedback system.

Data were gathered in 2011 and 2012. The residents were asked to hand in a carbon copy of their feedback forms to the secretariat of the department in which they were employed. These forms were then forwarded to the main researcher. The data were either anonymized with codes by the participants or anonymized before analysis by the main researcher. During the data collection period, the researchers visited the affiliated hospitals to remind residents, supervisors and secretaries to regularly hand in the carbon copies.

Our study was performed at a time when educational research was exempt from ethical review by Dutch law. The design of the study, however, is in agreement with the guidelines of the Helsinki Declaration (WMA 2013). We only used naturalistic data and both residents and supervisors were acquainted with the aims of the study. All data were handled strictly confidentially and anonymized before analysis. Residents consented by voluntarily sending a copy of their feedback forms to the researchers.

Statistical analyses

For each of the five authentic situations, the researchers analyzed whether written feedback was given on the CanMEDS roles that were preprinted on the forms. Subsequently, the quality of the feedback

was measured by examining how often the written feedback contained strengths and suggestions for improvement and whether the feedback was specific.

The specificity of the feedback comments was rated using the method of Pelgrim et al., (2012). Feedback was rated as specific if the comment met three criteria: (1) it was clear to which part of the observation it was related, (2) it included what went well or did not go well, and (3) why it went well or not. An example of specific feedback after the observation of a morning report is: Indicate during the handover what you think would be the most effective treatment option, given the results of a diagnostic test you ordered, so that your colleagues can continue the care policy you started. Feedback was rated as moderately specific when it only met one or two of the above-mentioned criteria. For instance, this comment only includes the what-criterion: Be aware that you can give others the impression of being distant. Feedback was rated as non-specific when it was formulated in general terms or was unclear, for instance: gain more experience. To ensure inter-rater reliability, NR, MW, RG, and JB independently rated 25 forms, containing a total of 150 feedback comments. Cronbach's Alpha was high (0.909) and correlations between all different raters were 0.642 or higher. Consequently, we did not adjust our coding scheme. NR and MW independently coded the remaining forms and subsequently discussed their interpretations and uncertainties to reach consensus. Differences in specificity of feedback were explored with Mann-Whitney U tests; a Bonferroni correction was applied ($\alpha = 0.003$) to correct for multiple comparisons.

Results

In total, 120 residents and 126 supervisors participated in our study. After excluding 14 feedback forms due to wrong usage, i.e. filling out the wrong form for the observed authentic situation or commenting on a situation that was not included in the feedback system, 591 forms were analyzed.

Written feedback was provided on all roles that were assigned to the five authentic situations. It was most frequently provided after observing Patient Encounters (269), followed by Oral presentations (92), Morning reports (81), CATs (79), and On-calls (70). Table 2 shows the extent to which feedback was provided on the roles that were included in the feedback system. When assigned to a situation, feedback on the Scholar role (92–95%) was most frequently provided and feedback on the Manager role (66%) least frequently.

Furthermore, the quality of the written feedback was investigated. Overall, concerning all authentic situations and all CanMEDS roles, strengths (78%) were provided more frequently than suggestions for

improvement (52%). With respect to the Collaborator, Reflective Professional, and Manager roles, less than 40% of the feedback forms contained suggestions for improvement (Table 3).

Further inspection of the quality of the written feedback revealed that, in general, feedback was more frequently scored as specific (n=1024) than as moderately specific (n=770) or non-specific (n=543) (Table 4). Feedback on Scholar was significantly more frequent specific than feedback on the other roles ($p=.000$). Feedback on Reflective Professional was significantly less frequent specific than feedback on Communicator, Collaborator, and Scholar ($p=.003$).

Table 2. Extent to which feedback was provided per CanMEDS role and per authentic situation

	Patient Encounter N=269	On-call N=70	Morning report N=81	CAT N=79	Oral presentation N=92
Medical Expert	78% (210)	-	-	-	-
Communicator	70% (188)	97% (68)	96% (78)	90% (71)	91% (84)
Collaborator	-	76% (53)	75% (61)	-	-
Scholar	-	-	-	95% (75)	92% (85)
Manager	-	66% (46)	-	-	-
Reflective Professional	-	84% (59)	72% (58)	78% (62)	79% (73)

Table 3. Extent to which strengths and suggestions for improvement were provided per CanMEDS role

		Patient Encounter	On-call	Morning report	CAT	Oral present.	Total
Medical Expert	Strength	93%(195)	-	-	-	-	93% (195)
	Improvement	75%(157)	-	-	-	-	75% (157)
	Both	68%(142)	-	-	-	-	68% (142)
Communicator	Strengths	95%(178)	100%(68)	99% (79)	97%(69)	100%(84)	98% (479)
	Improvement	65%(123)	68% (46)	86% (67)	71%(51)	82% (69)	75% (356)
	Both	60%(113)	66% (45)	85% (66)	69%(49)	82% (69)	70% (342)
Collaborator	Strengths	-	98% (52)	97% (59)	-	-	97% (111)
	Improvement	-	53% (28)	51% (31)	-	-	52% (59)
	Both	-	51% (27)	46% (28)	-	-	48% (55)
Scholar	Strengths	-	-	-	97%(73)	100%(85)	99% (158)
	Improvement	-	-	-	63%(47)	72% (61)	68% (108)
	Both	-	-	-	60%(45)	71% (60)	66% (105)
Manager	Strengths	-	97% (45)	-	-	-	97% (45)
	Improvement	-	46% (21)	-	-	-	46% (21)
	Both	-	4% (20)	-	-	-	43% (20)
Reflective Professional	Strengths	-	95% (56)	10% (58)	8% (61)	97 (71)	97% (246)
	Improvement	-	47% (28)	55% (32)	31%(19)	63% (46)	50% (125)
	Both	-	42% (25)	53% (31)	29%(18)	60% (44)	47% (118)

Table 4. Specificity of written feedback per CanMEDS role

CanMEDS role		Specific	Moderately Specific	Non-Specific
Medical Expert	Strength	40% (78)	37% (73)	23% (44)
	Improvement	48% (76)	24% (37)	28% (44)
	Total	44% (154)	31% (110)	25% (88)
Communicator	Strengths	51% (244)	31% (148)	18% (92)
	Improvement	60% (214)	26% (92)	14% (50)
	Total	55% (458)	29% (240)	16% (137)
Collaborator	Strengths	43% (48)	35% (39)	18% (92)
	Improvement	47% (28)	41% (24)	14% (50)
	Total	45% (76)	29% (240)	16% (137)
Scholar	Strengths	56% (89)	26% (44)	16% (25)
	Improvement	72% (78)	17% (18)	11% (12)
	Total	63% (167)*	23% (62)	14% (37)
Manager	Strengths	47% (21)	33% (15)	20% (9)
	Improvement	48% (10)	24% (5)	29% (6)
	Total	47% (31)	30% (20)	23% (15)
Reflective Professional	Strengths	37% (90)	25% (63)	38% (93)*
	Improvement	38% (48)	28% (35)	34% (42)
	Total	37% (138)	26% (98)	36% (135)

* Significant difference $p < 0.005$

Discussion

The results of our study indicate that it is possible to overcome the problem that feedback is mainly provided on the Medical Expert role. By assigning intrinsic CanMEDS roles to different authentic situations in which they can be observed and by structuring the feedback of the supervisors through preprinted forms, it is possible to develop a feedback system in which all roles are evaluated in different contexts. We found that the overall quality of the feedback was good, however, specific feedback and suggestions for improvement were frequently lacking for the roles Reflective Professional and Collaborator.

Our first research question aimed at investigating whether a feedback system - in which the most salient CanMEDS roles of an authentic situation are predetermined for evaluation - generates feedback on all intended roles. We found that all roles were covered in the written feedback. Apparently, the feedback system offers enough structure to guide supervisors in incorporating the intrinsic roles in their feedback. This study shows that it is possible to develop a feedback system in which feedback is provided on different CanMEDS roles. The system is generalizable to different authentic situations and roles. It may easily be expanded and be tailored to other workplace-based training settings.

In addition to investigating whether the roles were covered in the supervisors' feedback, we analyzed the extent to which feedback was provided on the roles that were pre-printed on the forms. The forms contained written feedback concerning the pre-defined roles. The extent to which feedback was provided on the Manager role was smallest. This role seemed particularly suitable for being observed in the authentic situation of a weekend On-Call and, therefore, had only been assigned to this situation. Supervisors may have provided relatively little feedback on the Manager role, because four roles had been assigned to the On-Call situation: Manager, Communicator, Collaborator, and Reflective Professional. As is suggested in the literature, discussing four different roles in one feedback moment might be too much (Archer 2010). Apparently, the supervisors often preferred providing feedback on the Communicator, Collaborator and Reflective Professional roles rather than on the Manager role. A strategy to increase the extent, to which supervisors provide feedback on a specific role, can be to limit the number of roles assigned to an authentic situation to two or three. Besides, the On-Call form was the least frequently used feedback form, which has resulted in even less feedback on the Manager role. Although it is questionable whether all roles should be equally represented in feedback, feedback on the Manager role was certainly underrepresented in our dataset. By extending the feedback system with other authentic situations in which specific roles such as the Manager role can be evaluated, the system could be further improved.

The quality of the written feedback on the different CanMEDs roles was first explored by examining whether the comments contained strengths and suggestions for improvement. Supervisors almost always pointed out what the resident did well. In all authentic situations and on all CanMEDS roles, 93-99% of the feedback contained strengths. Even though the forms specifically offered space to indicate both strengths and suggestions for improvement, the latter were regularly lacking. Although suggestions for improvement were often provided on the Medical Expert, Communicator and Scholar roles, they were lacking in 60% of the feedback on Collaborator, Manager, and Reflective Professional. Supervisors may find it hard to come up with valuable suggestions for improvement with respect to these roles because these roles are relatively new and still in development within the medical domain. Coming up with valuable improvement points, especially for residents who are already high performing, can therefore be challenging. This is an alarming concern, because suggestions for improvement, even if they are minor, are conducive to learning and reflection (Hewson & Little 1998; Sargeant et al., 2009).

The second indicator of the quality of feedback we studied was specificity of the written comments. Our results showed that the comments were more frequently specific than nonspecific. However, we found significant differences in specificity of feedback between the CanMEDS roles. Comments related

to the Scholar role were significantly more frequent specific than comments related to all other roles. Comments concerning the Reflective Professional role were least frequently specific, which might hamper residents' competence concerning this role. Science and scholarly skills have been part of medical training for a long time, whereas reflection is relatively new. The differences in specificity of feedback we found, may also be attributed to the different nature of the roles. The Reflective Professional role comprises internal processes and behaviors that cannot be directly observed by supervisors, whereas the Scholar role is more clearly defined in observable competencies. Especially in the CAT and Oral Presentation situations, clear guidelines may have helped supervisors give specific and detailed feedback.

It has been suggested in the literature, that the rather abstract and general descriptions of some intrinsic roles -for example the Manager, Collaborator, and Reflective Professional roles- may hamper implementation of these roles in daily practice (van der Lee et al., 2013). Especially roles that had not been part of medical training for a long time might need further clarification. It may be difficult for supervisors to operationalize these roles, which could explain some of the differences we found between the roles concerning the quality and the extent to which feedback was provided. Supervisors may need more guidance and support to gain insight into these roles. They should develop an awareness of their own limitations with regard to providing feedback on these roles and may need additional training on how to observe and evaluate performance on these roles.

The strength of our feedback system is that it is built on the experiences of internal medicine physicians as well as literature on effective feedback. With the help of experienced internal medicine physicians who are aware of what goes on in medical practice, we were able to assign the CanMEDS roles to authentic situations that frequently occurred in residency training, which may have raised the acceptability of the feedback system. We took into account the main principles of effective feedback as described in the literature. A strength of our study is, that we applied an existing method to rate the specificity of the written feedback comments, the method described by Pelgrim et al., (2012).

A possible limitation of our feedback system is that it may need some further improvement. The Manager role was under-represented in the system. It could only be evaluated in the situation of being a weekend On-call. The extent to which feedback was provided on this role was smallest. Its rather abstract and general description may have hampered the supervisors in providing effective feedback. This role should be assigned to more authentic situations. In order to ensure high-quality feedback on the different CanMEDS roles, supervisors should gain more awareness of what is meant by these roles, how to observe performance on these roles and how to improve the quality of their written feedback.

Maybe printing instructions for the supervisors on the backside of the feedback forms is an easy and helpful way to help supervisors gain more insight into the roles.

A limitation of our study may be that it was focused on supervisors' written feedback on residents' performance, which was only a brief summary of the complete feedback moment. As we did not gather rich data on each feedback moment, we do not know what actually was done and said, which in turn may have affected the quality of the feedback. Another limitation may be that, due to the decision to investigate the entire, changing, population of residents and supervisors from seven hospitals during a longer period of time, the response rate is hard to estimate. When we discussed this issue with the residents and program directors, they assured us that most, if not all, residents in their department had handed in their feedback forms for purpose of this study. We can, however, not completely rule out selfselection. Finally, in our quantitative analysis, individual differences in supervisors' feedback behaviors were not taken into account. When transcribing the forms we did, nonetheless, notice that some supervisors were prone to systematically provide extensive feedback on all pre-defined CanMEDS roles.

Future research could explore how supervisors operationalize the CanMEDS roles when they provide feedback to residents. These insights can be used as an input for teacher training and may help supervisors gain knowledge and awareness of the different CanMEDS roles and how to observe and evaluate the competencies underlying these roles.

Conclusions

It is possible to develop a feedback system in which CanMEDS roles are covered and residents receive feedback on these roles. By (1) assigning intrinsic CanMEDS roles to different authentic situations in which they can be observed and (2) structuring the feedback of the supervisors through preprinted forms, the roles can be evaluated in different contexts. Although most supervisors are proficient in providing effective feedback, we recommend providing additional training to improve awareness of the different CanMEDS roles and increase insight in how to evaluate the underlying competencies.

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Chapter 3

Training supervisors improves their feedback to residents: An intervention study.

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Abstract

Objective To evaluate whether a short and simple training improves the quality of feedback residents receive from their clinical supervisors in daily practice.

Design Longitudinal quasi-experimental controlled study with a pre-test/post-test design. We collected multiple pre- and post-measurements for each supervisor for two years. A repeated measurements ANOVA was performed on the data.

Participants Internal medicine supervisors (n=107) from 7 hospitals in the Netherlands participated in this study.

Intervention The trained group attended a short 2,5-hour training session during which they practiced giving feedback in a simulated setting using video fragments and role-play. Highly experienced internal medicine educators guided the group discussions about the feedback. The control group did not receive any feedback training.

Main Measures Residents rated the quality of supervisors' verbal feedback with a previously validated questionnaire. Furthermore, the completeness of supervisors' written feedback on evaluation forms was analyzed.

Key Results The data (n=1127 evaluation forms) showed a significant increase in the quality of feedback after the training. This effect persisted up to six months after the training session.

Conclusions A short training session, in which supervisors practice giving feedback in a simulated setting increases the quality of their feedback. This is a promising outcome since it is a feasible approach to faculty development.

Introduction

In competency-based residency training, regular, high-quality feedback from supervisors on performance is of major importance for resident learning.¹ Frameworks such as the CanMEDS define desired learning outcomes in the form of competencies that residents need to develop.² To enable residents to acquire the desired competencies, supervisors need to address them in their feedback. Defining competencies, however, does not necessarily mean that supervisors know how to effectively incorporate them into feedback,³⁻⁵ training supervisors is therefore considered an essential component of successful implementation of competency-based residency training.^{6,7} Many faculty development programs have been developed for this purpose, however, these are often demanding and time-consuming on the part of the busy clinical supervisors.⁸⁻¹¹ We aimed for a more feasible approach to faculty development by addressing important aspects of effective feedback during a short training session.

Aspects that make feedback effective, are extensively described in the literature.^{12,13} Previous studies have shown that feedback in the clinical workplace is regularly too general and not well balanced between the different competencies.³⁻⁵ Although residents consider narrative feedback helpful, they also express a need for more specific suggestions for improvement from their supervisors.¹⁴ Furthermore, they desire greater supervisor involvement in both synthesizing feedback comments and integrating them into their practice.¹⁵ A feedback training for clinical supervisors should therefore focus on how they can help residents reflect on their performance regarding different competencies and define points for further improvement.

In literature, there have been several studies investigating the effects of faculty development on clinical supervisors' teaching skills. Multiple studies have shown that faculty development programs positively impact supervisors' teaching skills.^{6, 8-11, 16-26} Unfortunately, these studies often rely on self-reported perceived effects or overall satisfaction of participants rather than actual teaching outcomes.^{6,8, 16-24} Other study designs to evaluate faculty development are not controlled.^{18,20,25,26} The few studies we could find with rigorous designs and promising outcomes, however, concerned intensive or longitudinal faculty development programs that require a major time investment from the clinical supervisors.⁸⁻¹¹ Since clinical supervisors have expressed that they only find a short training acceptable and useful, these intensive programs might not be feasible.^{27,28} Although there are some indications that a few hours of training already impacts the quality of supervisors' feedback, it remains unknown whether the effects last over a longer period.^{29,30}

To achieve best practice and improve the quality of clinical supervisors' feedback to residents, we developed a training session for supervisors on how to provide feedback on competencies, which requires minimal time investment on the part of the supervisors. We examined the effectiveness of this training session over time by comparing measures of quality of verbal feedback and completeness of written feedback to residents, between a trained group of supervisors and an untrained control group.

Methods

Setting and Subjects

This study was set out in the Departments of Internal Medicine of seven teaching hospitals affiliated with the University Medical Center Groningen (UMCG). All participants were informed about the study, that participation was voluntary and that data would be analyzed anonymously. All residents (n=192) and all their supervisors (n=181) agreed to participate in this study.

Internal medicine residency is a six-year training program in which rotations are distributed over different hospitals. During this study, residents received written feedback from multiple supervisors using regular, clinical situation-specific evaluation forms. These forms were designed to foster high-quality feedback and included fields for writing down the positive and improvement points concerning predetermined CanMEDS roles within specific situations.³¹ There were no preset moments for the evaluations; instead, residents were encouraged to ask their supervisors for feedback at least twelve times per year. Both residents and supervisors could initiate a feedback moment. These feedback forms were an integral part of residents' regular portfolios. All supervisors received previous training in the basics of clinical supervision and workplace learning.

Supervisor training session

The training was a brief 2,5-hour session under guidance of two internal medicine postgraduate educators who were highly experienced in providing feedback. We organized local training in each teaching hospital, with approximately 8-12 supervisors in each session. The training drew on the professional experience of the trainers, recent literature about feedback^{3-5, 12-15}, and a notion of the importance of reflection for residents' learning.³³ During the training, we showed short video fragments of resident-patient interactions. The videos were specifically recorded for faculty training purposes with the written consent of the videotaped resident, and selected fragments of the TV show *House M.D.* While watching the videos, supervisors had to choose a competency, or two, to focus their

feedback. They were then asked to identify both strengths and points for improvement for the resident with that competency in mind. Subsequently, they participated in role-playing exercises similar to the video fragment they had just seen. First, the trainers set an example by playing both roles and then the supervisors took turns in giving feedback while the trainers played the resident role. After each role-play, trainers provided feedback and led a group discussion. The group discussed the feedback giving process, feedback strategies, what went well, areas of improvement, and other options the supervisor could have taken. Hence, the training was tailored to individual supervisors' needs.³² Finally, we synthesized key learning points for the entire group. The training is described in more detail in Appendix 1.

Study design

The study was a quasi-experimental, longitudinal, pre-post controlled trial. To investigate the effectiveness of the training session, supervisors were either assigned to the intervention group receiving feedback training, or to the control group receiving no training. In each of the seven hospitals, we organized a local training in consultation with the program director. We based group allocation on supervisors' availability on the date of the training and supervisors' personal preference to participate in the training or not. All supervisors were invited to register for the training. When half of the supervisors in a department had registered, enrollment for the training was closed and the remaining supervisors were assigned to the control group. Trained supervisors were instructed not to discuss the content of their training with their untrained colleagues, nor to provide residents with information concerning their enrollment and participation in the feedback training.

Training effectiveness was measured in terms of quality and completeness of verbal and written feedback provided by the supervisors using pre- and post-measurements. Data of all regular feedback moments were collected for the year prior to the training (pre-measurements) and during the year after the training (post-measurements). The design of our study, therefore, reflected routine daily practice and the way clinical supervision was organized in the Department of Internal Medicine.

Measurements

Quality of feedback focused on verbal feedback and was measured by a questionnaire filled out by residents right after each regular feedback moment. We used an existing, reliable questionnaire (Cronbach's $\alpha=0.91$) that was developed and validated with university students from several disciplines.³⁴ The questionnaire consisted of 11 items that had to be rated on a Likert scale from 1-7 (total score range: 11-77). We slightly modified the questionnaire to better suit our study population and replaced "students" with "residents" and "feedback providers" with "supervisors". The

questionnaire we used is depicted in Appendix 2. The questionnaires were attached to the regular evaluation forms on which the supervisors had to write down their feedback. Shortly after receiving feedback from their supervisors, the residents filled out the questionnaire, tore it off of the evaluation form and sent it directly to the primary researcher (first author) without showing it to their supervisors.

Completeness of feedback was measured by analyzing feedback that was written on regular evaluation forms. Feedback was rated as 'extensive', 'conform instruction' or 'limited'. 'Extensive' feedback contained positive and improvement points for at least two-thirds of the predetermined CanMEDS roles. Feedback 'conform instruction' comprised positive and improvement points for at least half of the CanMEDS roles that were assigned to a specific situation. 'Limited' feedback addressed either positive or improvement points or only one CanMEDS role. NR, JB and RG analyzed the completeness of a subset of 25 random feedback forms for which Cohen's Kappa was calculated to ascertain interrater reliability ($K=0,89$). Since interrater reliability was almost perfect³⁵, NR proceeded to analyze the remaining feedback herself.

Data Analysis

Quality of supervisor's feedback to residents was first approached with the *feedback form as unit of analysis*. The continuous longitudinal data were coded into 5 time slots: T₀ before training, T₁ up to two months after, T₂ 2-4 months after, T₃ 4-6 months after and T₄ more than 6 months after the training session. T-tests were used to compare differences between trained and control group for each time slot. Furthermore, we used ANOVAs, controlled for hospital, to compare differences in quality of feedback within the trained and control group over time.

Subsequently, quality of feedback was analyzed with the *supervisor as the unit of analysis* to evaluate a change in quality of individual supervisor's feedback over time. In contrast to our initial tests with feedback form as the unit of analysis, this approach corrected for differences in the number of times a supervisor provided feedback, as we used average scores for each supervisor per time slot. In order to have sufficient data points to do so, the data were restructured into three time slots: Before the training (T₀), immediately after up to six months after the training (T_{1,2,3}) and more than six months after the training session (T₄). Differences in quality of feedback between the trained and control group were analyzed for each measurement moment using ANOVAs, controlled for hospital.

Completeness of supervisor's feedback was also analyzed with the supervisor as unit of analysis, using the frequencies of a categorical outcome (limited, conform instruction and extensive feedback).

Contrasts between completeness of trained and untrained supervisors' feedback before (T_0) and after the training ($T_{1,2,3,4}$) were analyzed using Bonferroni corrected ($\alpha=0.008$) Chi-square tests.

Results

We received 1189 evaluation forms, from which 1127 were used for analysis. From the remaining 62 forms, 19 were excluded because the measurement moment (date) could not be determined, 43 forms were excluded because either pre- or post-measurements were missing from those supervisors. In total, 1127 evaluation forms from 107 supervisors –56 in the trained group and 51 in the control group– were analyzed. The number of measurement moments varied across supervisors, depending on how often they provided feedback. Data were normally distributed, with Skewness and Kurtosis between 1.5 and -1.

Quality of feedback

Table 1 shows that at the baseline (T_0) there were no differences in quality of feedback between the control and the to-be-trained group. At T_1 , T_2 , and T_3 , quality of trained supervisors' feedback was statistically significantly higher compared to that of untrained supervisors. Six months or more after the training, at T_4 , no significant differences were found between the groups.

Testing differences in quality of feedback between the trained and control group with *feedback form as unit of analysis*, ANOVAs revealed a significant increase in quality of feedback in the trained group directly afterwards up to 6 months after the training, whereas in the control group quality of feedback was only statistically significantly higher at T_4 (Table 1).

Table 1. Quality of feedback in the control and trained group over time on with feedback form as unit of analysis

Quality of feedback (Range: 11–77)	Control group	Trained group	T-Tests
T_0 Mean (S.D.)	61.47 (8.88)	60.79 (8.25)	$t(824)=1.13$, $p=.62$
T_1 Mean (S.D.)	63.73 (8.63)	65.65 (5.79)*	$t(46)=-9.20$, $p=.36$
T_2 Mean (S.D.)	60.94 (8.62)	64.74 (7.53)*	$t(91)=-2.23$, $p=.03$
T_3 Mean (S.D.)	64.24 (9.31)	67.13 (6.50)*	$t(85)=-1.70$, $p=.06$
T_4 Mean (S.D.)	65.60 (6.97)*	63.42 (8.56)	$t(76)=1.24$, $p=.22$
ANOVA ¹	$F(4,442) = 1.59$, $p=.19$	$F(4,629) = 7.20$, $p=.00$	

¹ Controlled for hospital

* Post-hoc Bonferroni tests with significant differences ($\alpha=0.05$)

Testing differences in quality of feedback between the trained and control group with *supervisor as unit of analysis*, ANOVAs found no significant differences between the two groups at the baseline measure (T_0). A significant increase in quality of feedback between the control ($M=62.72$, $SD=7.52$) and trained ($M=66.14$, $SD=4.64$) group of supervisors was found during the first six months after the training $F(1, 87) = 6.76$, $p=.04$. After six months, no significant differences in quality of feedback were found between trained and untrained supervisors (Table 2).

Table 2. Quality of feedback in the control and trained group over time with supervisor as unit of analysis

Quality of feedback (Range: 11–77)	Control group	Trained group	ANOVA ¹
T_0 Mean (S.D.)	61.62 (.59)	61.68 (.78)	$F(1, 164) = .02$, $p=.89$
$T_{1,2,3}$ Mean (S.D.)	62.72 (7.52)	66.14 (4.64)	$F(1, 87) = 6.76$, $p=.04$
T_4 Mean (S.D.)	66.16 (6.19)	63.02 (9.07)	$F(1, 49) = 2.77$, $p=.15$

¹ Controlled for hospital

Completeness of feedback

Completeness of supervisors' written feedback on evaluation forms is presented in table 3. Overall, feedback was more often conform instruction or extensive than limited in both groups before and after the training. After the training session, the proportion of extensively filled out feedback forms significantly increased from 16% to 38% in the trained group $\chi^2(4, N = 602) = 15.17$, $p=.00$.

Table 3. Completeness of feedback in the control and trained group over time

Completeness of feedback		Limited	Conform instruction	Extensive
Control group	T_0 % (n)	23% (23)	68% (234)	25% (85)
	$T_{1,2,3,4}$ % (n)	8% (7)	67% (60)	26% (23)
Trained group	T_0 % (n)	4% (20)	80% (382)	16% (77)
	$T_{1,2,3,4}$ % (n)	5% (7)	57% (78)	38% (51)

Discussion

This study revealed that it is possible to increase the quality of supervisors' verbal feedback and the completeness of their written feedback with a brief training session. Quality of feedback increased significantly up to 6 months after the brief 2,5-hour feedback training session during which supervisors practiced giving feedback in a simulated setting.

The residents rated the quality of verbal feedback from trained supervisors higher, and the written feedback from trained supervisors tended to be more complete.

Although the supervisors had only practiced providing verbal feedback in a short training, discussing the content of verbal feedback also seemed to have increased the completeness of their written feedback. Given that written feedback is often of poor quality,³⁶ finding these improvements after such a brief training session is very promising for supervisors in other settings, who previously indicated that attending a short training session would be more feasible for them.^{27,28}

Six months after the training, however, significant training effects could no longer be detected. Although initial analyses found differences in quality of feedback in favor of the control group at T₄, this can most likely be attributed to an overrepresentation in our sample of some supervisors that tended to provide higher quality feedback. When we additionally analyzed feedback quality with supervisor as unit of analysis, we found no significant differences between trained and not trained supervisors at T₄. It is likely that residents more often initiated feedback conversations with supervisors who tended to provide higher quality feedback, this may explain our initial deviant findings. As the training took place on the supervisor level, evaluating its effects on supervisor level seems most orderly. We, therefore, derive at the conclusion that there were no significant differences in quality of feedback between the two groups at T₄.

It therewith seems that after six months, the control group had caught up with the trained group, and the quality of feedback in this group had steadily increased to the same level. Possibly, behaviors trained in the intervention group had, tacitly, been adopted by supervisors from the control group. Since residents received feedback from both trained and untrained supervisors, it is possible that they became used to higher-quality feedback and started to request it from untrained supervisors as well. In the setting, residents are supposed to bring up topics they would like to receive feedback on and explain how they think they did themselves first. Being an active partner in the feedback conversations, residents may have gradually started to ask more probing questions when feedback was generic or vague, resulting in an overall increase in the quality of feedback. This may importantly influence the

feedback interactions and therewith lead to the adoption of the trained behaviors into the feedback culture of the department.³⁷ Further research is needed to determine what happened exactly with regard to this spillover effect.

A distinctive feature of both the training and design of this study is that they are thoroughly grounded in the authentic clinical workplace. The training session was developed by experienced internal medicine educators and applied to Department of Internal Medicine of 7 different hospitals, from which all supervisors and residents participated. An important advantage of setting out the study in the departments as a whole is that it increases the likelihood that similar results can be achieved in other hospital settings. The comprehensive approach allegedly helped us to achieve valid and reliable results, although it led to a notable concession in the study design. It was not feasible to randomly assign supervisors to either the control or trained group due to their busy schedules. This may have allowed for selection bias. However, since we did not find differences in baseline measurements between both groups, it is unlikely that the effects found should be attributed to factors other than the training session.

The two complementary outcome measures increased the validity of the study. The residents rated the quality of their supervisors' verbal feedback using a standardized questionnaire, which was complemented by an analysis of the completeness of written feedback. Although trained researchers might have scored the quality of the provided feedback differently, the residents are the receiving party and it therefore seems of major importance how they perceive its quality. The study design allowed for comparisons over time, which helped us gain insight into the long-term practical relevance of the training.

This study was limited to measuring the effects of the short training session, and therewith only reveals the training session's effectiveness, without unravelling the exact mechanisms underlying the increase in quality and completeness of feedback. We expect that the characteristic combination of general tips for delivering feedback according to educational standards^{13, 38} and discussions about the content of the feedback caused the quality of the supervisors' feedback to improve. In a previous study, we found that supervisors' written feedback on competencies did not always correspond with the official descriptions of these competencies as defined in the original document.³ An underlying mechanism for the training session's effectiveness may, therefore, be that discussions had been held on what competencies mean, how they can be observed in clinical practice and how feedback on these competencies can be formulated. Further research remains to be done to elucidate the exact mechanisms involved.

Conclusions

Stepping out of the busy daily clinical activities to take a moment to practice and discuss feedback skills seems to increase the quality of feedback up to six months afterward. Even a short training session that requires minimal effort from clinical supervisors can already increase the quality of their feedback. Offering supervisors opportunities to practice with giving feedback in simulated settings and reflect upon their performance seems to be an effective way to improve their feedback skills.

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Appendix 1: Description of feedback training session

Group size: 8-12 supervisors (2 trainers)

General introduction (15-20 min)

The session started with a short introduction, explaining the importance and the purpose of the training and of providing high-quality feedback. The trainers advised the supervisors to begin/guide feedback conversations with residents by asking questions, such as *'What would you like to talk about?'* or *'Did you define your goals in advance?'*. Furthermore, they showed how to identify all CanMEDS roles and their related competencies in residents' performance and explained that assessing key competencies is like putting on different pairs of glasses. Aspects of quality of feedback, such as specificity and completeness, were discussed throughout the session.

Video fragments (3-5 min)

Video fragments of different resident-patient encounters and selected fragments of the series *House M.D.* were shown on a big screen. While watching the video fragments, supervisors had to decide on which competency they would like to focus their feedback. Subsequently, they were asked to identify strengths and points for improvement for the resident with that competency in mind.

Practising (5-10 min)

Supervisors took turns in practising giving feedback to the resident in the video fragment. One of the trainers played the role of resident. The other supervisors were instructed to formulate tips for the practicing supervisor. During the first round, the trainers set an example by playing both the role of supervisor and resident.

When participants raised questions about what would have happened if the resident had responded differently (i.e. ignorant, attacked, emotional), the trainers asked the participant to take on the role of supervisor, while one of them played the role of resident responding in that particular way.

Discussions (5-10 min)

After practicing, the trainers asked the practicing supervisor to reflect upon what went well and what could be further improved. Additionally, the other participants were asked to share their tips. Discussions about what others would have said in their feedback, or how others would have said it, were facilitated. The trainers provided a safe and open atmosphere, in which participants were encouraged to try out different feedback styles.

After the discussion, another video fragment was shown and another supervisor would take turn practicing. Depending on the available time, around six video fragments were shown; so over half of the participants got the opportunity to practice him or herself. The others learned from actively engaging in the discussions and thinking along.

Appendix 2: Questionnaire filled out by residents about the quality of feedback

Name Resident:	Date:	Year of residency:						
Name Supervisor:	Rotation:							
Please indicate below in which situation you just received feedback:								
Oral Presentation	Critical Appraisal of a Topic	Patient Encounter	Morning report	Shift				
Indicate to what extent you agree with the statement	completely agree	neutral	completely disagree					
1. The supervisor's comments helped me focus on areas I can improve	1	2	3	4	5	6	7	
2. The supervisor showed me how to critically assess my own work.	1	2	3	4	5	6	7	
3. The supervisor commented not just what was wrong, but also what to do about it.	1	2	3	4	5	6	7	
4. Feedback was provided that I could use in future situations.	1	2	3	4	5	6	7	
5. The supervisor offered opportunities to clarify their comments.	1	2	3	4	5	6	7	
6. The feedback comments made me think further about the topic.	1	2	3	4	5	6	7	
7. The supervisor acknowledged my good points or ideas.	1	2	3	4	5	6	7	
8. The supervisor indicated what I did well.	1	2	3	4	5	6	7	
9. The supervisor recognized the effort I had made.	1	2	3	4	5	6	7	
10. The supervisor gave feedback that I could not understand.	1	2	3	4	5	6	7	
11. The feedback was inconsistent or contradictory.	1	2	3	4	5	6	7	

This questionnaire is based on the questionnaire validated by Lizzio and Wilson (2008)

Figure 1: Leaflet ‘Reflection on Action’

<i>Reflection on Action</i>	
Background	
- Before providing feedback, determine the compliments you want to make (max 2-3) and what aspects can be further improved. Feedback can address inter-personal and substantive issues. - You can focus on different aspects of a specific performance, depending on the spectacles (competency) you put on. - When you experience resistance during the conversation, switch the topic towards this resistance (Open attitude / reflecting with a professional).	
Opening	<i>Start open</i>
- How did it go? - How do you feel about the activity? - Is there anything you would like to talk about?	
Questions leading to reflection	You can encourage a resident to reflect upon performance by asking the right questions while judging as little as possible.
- Did you set goals in advance? - Did you reach your goals? - How did you prepare?	
Experiencing	Try naming any emotions you observe or have observed before.
- What do you think about when you look back; what does it do to you? - What do you think that says about you to others?	<i>Postpone your judgment as long as possible</i>
Analysis	
- Have you experienced this before? - Why do you see it this way? - Are there other ways to approach this?	
Changed Perspective	Conclude with specific advice that resonates with the resident's level of performance and check whether it furthers the resident's interests and objectives.
- How would you do it better next time? What would you change and why?	
Winding up	
- Do you understand how you can use my advice to your benefit in the future?	
<i>All feedback is a gift!</i>	

Chapter 4

What supervisors say in their feedback: Construction of CanMEDS roles in workplace settings

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Abstract

The CanMEDS framework has been widely adopted in residency education and feedback processes are guided by it. It is, however, only one of many influences on what is actually discussed in feedback. The sociohistorical culture of medicine and individual supervisors' contexts, experiences and beliefs are also influential. Our aim was to find how CanMEDS roles are constructed in feedback in a postgraduate curriculum-in-action. We applied a set of discourse analytic tools to written feedback from 591 feedback forms from 7 hospitals, including 3150 feedback comments in which 126 supervisors provided feedback to 120 residents after observing their performance in authentic settings. The role of Collaborator was constructed in two different ways: a cooperative discourse of equality with other workers and patients; and a discourse, which gave residents positions of power—delegating, asserting and 'taking a firm stance'. Efficiency -being fast and to the point- emerged as an important attribute of physicians. Patients were seldom part of the discourses and, when they were, they were constructed as objects of communication and collaboration rather than partners. Although some of the discourses are in line with what might be expected, others were in striking contrast to the spirit of CanMEDS. This study's findings suggest that it takes more than a competency framework, evaluation instruments, and supervisor training to change the culture of workplaces. The impact on residents of training in such demanding, efficiency-focused clinical environments is an important topic for future research.

Introduction

In order to prepare physicians better for their future practice and, ultimately, increase the quality of care, competency frameworks have been widely adopted. The assumption that defining professional standards for educational purposes can lead to better care is made explicit in the slogan of the CanMEDS framework: ‘Better standards, better physicians, better care’ (Frank 2005). Competencies concerning team processes like communication, collaboration and management, have been included alongside medical expertise in response to concerns about patient safety and the increasing complexity of healthcare systems. The rationale for including these competencies within competency frameworks is supported by the findings of multiple review articles that improved performance in those domains correlated with a higher quality of care (Dietz et al., 2014; Kuenzle et al., 2010; Schmutz and Manser 2013). Showing a correlation between physician attributes and quality of care, however, does not guarantee that including those attributes in competency frameworks will improve care.

Although CanMEDS is the most widely adopted competency framework, little research has been conducted on how curricula informed by it operate in practice. Previous research has focused mainly on the development of assessment instruments (Hall et al., 2012; Jefferies et al., 2011; Sherbino et al., 2013), implementation processes (Frank et al., 2010; Iglar et al., 2013; Ringsted et al., 2006; Rousseau et al., 2007; Scheele et al., 2008) and the extent to which graduates feel prepared for practice (Berkenbosch et al., 2013; Card et al., 2006; Haji and Steven 2014). Given that competency-based education directs attention to learning outcomes, it has seemed logical that research should concentrate on developing valid and reliable assessment instruments to measure these outcomes. Formative evaluation of performance in practice, which can show whether trainees are able to manage the complexities of practice, is also a powerful learning tool given that it provides learners with feedback about their performance (van der Vleuten et al., 2010; Ross et al., 2012). Since residents’ knowledge and practice is influenced by the feedback they receive, the way supervisors operationalize the CanMEDS roles in their feedback is an important influence on patient care. Despite its strong influence on what residents consider to be high quality care and their trajectories towards becoming competent physicians, we have not been able to find any research into what supervisors actually say in their feedback on CanMEDS roles.

Even though the roles and their underlying competencies have been described in great detail in official documents, that does not mean they have the same meaning in practice. Supervisors’ conceptions of the roles are not only based on their knowledge of official documents, but also on their own experiences and beliefs, which are in potential conflict with the official CanMEDS discourse. Whitehead

et al., (2011) performed a critical discourse analysis on the historical development of these official documents, concluding that the roles should be treated as socially negotiated outcomes rather than objective ideals; the roles, in other words, fit the needs of the profession and society at a certain time and in specific contexts. This insight applies at the level of single training programmes as well as the (inter)national level. Their meaning may change as the roles are translated into practice so that they support a different kind of health care from that proposed in the original framework. Zibrowski et al., (2009) found that residents had a narrow view of the CanMEDS roles and sometimes did not see their relevance to patient care so it is relevant to study how supervisors construct the roles in their feedback to residents and how this relates to the original aims of the framework. We set out to explore how CanMEDS-based postgraduate training runs through in practice, by analysing how the roles are constructed in a curriculum-in-action. By studying how supervisors constructed the CanMEDS roles in their written feedback to residents, we aimed to gain insight into what is considered 'natural' in an authentic healthcare setting.

Conceptual orientation

Constructivist stance

Setting out to analyse how the CanMEDS roles are constructed in workplace education places this research firmly within the constructivist theoretical paradigm. A constructivist stance legitimates the actuality of the CanMEDS roles as constructed in social interactions, specifically supervisors' feedback to residents. This constructivist stance departs from previous research (Bordage 2009), which has tended not to specify its theoretical orientation (Beckman and Cook 2007), but tacitly adopted behaviourist (assessment drives learning) or cognitivist (how learners deal with feedback) assumptions. A behaviourist stance would make it logical to improve practice and performance by developing assessment instruments, whereas a cognitivist stance might focus on intra-individual responses to feedback. We reasoned that a constructivist stance would complement those other approaches by focusing on how meaning is constructed during feedback-in-action.

A critical discourse approach

Our constructivist stance towards the construction of professional roles makes it logical to choose one of the many discourse methodologies. A critical discourse approach assumes that the language people use is influenced by their personal social backgrounds, cultures, and beliefs. People's spoken words construct social positions and actions by making one stance or action seem natural and an alternative one less natural. In the context of our study, this means that what supervisors say in their feedback is based not just upon what they have read about the CanMEDS roles and their training, but also upon

their personal histories and experiences. The word ‘Critical’, as applied to discourse analysis, means that the analysis explores how language can reveal relationships, power, and meaning that may otherwise remain hidden (Fairclough 2001). It explores how language relates to the social construction of various phenomena; how it functions in maintaining and changing relations and ideologies (Fairclough 2001). Critical discourse analysis is used widely across many disciplines, and is increasingly acknowledged as an insightful methodology for medical education research (Hodges et al., 2014; Dornan 2014). Critical discourse approaches informed by the work of Foucault (MacLeod 2011), Bakhtin (Dornan et al., 2015) and Gee (Graham and Dornan 2013) have all been used in medical education.

The present study

The objective of the present study was to find out what is considered important in a clinical setting in which the curriculum is informed by the CanMEDS framework. We chose to use a methodology developed by Gee (2014a) because it provides a clearly defined set of heuristics that could be applied to a rigorous content analysis of supervisors’ feedback, which would answer the question: how does supervisors’ written feedback in the setting of ‘real-time’ clinical practice construct the CanMEDS roles? We were aware that we might miss some aspects of discourses that were only discussed orally during feedback conversations; focusing on written feedback, however, allowed us to incorporate many different feedback comments from many supervisors to many residents in a detailed textual analysis, which would not be possible when analysing feedback conversations.

Methods

Ethics approval

At the time this study was set up, educational research was exempt from institutional board review in the Netherlands. The research was designed to meet the Helsinki Declaration guidelines (Eva 2009; ten Cate 2009; WMA 2008). Naturalistic data—feedback forms collected in usual practice—were used. Both residents and supervisors consented to participate. Residents submitted copies of their feedback forms, which were then anonymised by the researcher.

Procedure and Participants

Data were collected from seven teaching hospitals affiliated to the internal medicine residency programme of the University Medical Centre, Groningen, the Netherlands. Routine feedback forms from all 120 first, second and third year residents, and all their 126 supervisors were included. Programme directors informed the supervisors and residents about the study and the researchers held

a short introductory meeting at the beginning of the data collection period to explain the feedback method used and the procedures of the study. During the course of 1 year, residents handed in anonymised copies of all their feedback forms to departmental secretaries, who forwarded them in sealed envelopes to the primary researcher (NR).

The CanMEDS framework has been used in Dutch internal medicine postgraduate training programmes since 2001. Stakeholders, including internal medicine programme directors, slightly adjusted the original CanMEDS framework to make it suitable for the Dutch internal medicine context. The role Professional was changed into Reflective Professional (Gans 2009). The underlying competencies of the roles remained largely the same. All Departments of Internal Medicine in the Netherlands use the adjusted framework. Supervisors were offered 'Teach-the-teacher' training on how to give feedback in a competency-based setting.

Workplace-based assessments in this postgraduate programme were guided by the principle that versatile roles should be evaluated in different authentic settings. Experienced programme directors assigned different CanMEDS roles to authentic settings that are suitable for direct observation and feedback. Feedback was to be given after direct observation of a resident's performance during patient encounters, on-calls, clinical handovers, presentations of a critical appraisal of a topic (CAT), or oral presentations. These settings influence the topics that are discussed in the feedback conversations, and therefore affect how the roles are constructed in our data. A broad variety of those feedback settings were included in this study, in an attempt to capture the broad discourse of CanMEDS roles as it occurs in the clinical practice. Table 1 describes how the different roles were evaluated in the various settings of evaluation. Feedback was given orally shortly after residents' performance had been directly observed. Supervisors were instructed to write down both what went well and what could be improved per CanMEDS role, on feedback forms specific to the different settings. That written feedback was used for this study. Both supervisors and residents could initiate feedback sessions. The forms were held in residents' portfolios.

Research team

The research team was assembled to represent a range of disciplines, which could inform the data interpretation. NR is a Ph.D. candidate in medical education that has a master's degree in educational sciences. TD is an experienced internist and expert in qualitative research. RG is a medical doctor and programme director in internal medicine who helped implement the CanMEDS framework in the Netherlands. JB is a medical doctor and dean of education in a University Medical Centre. JC is a psychologist and professor in medical education. DJ is a professor in medical education whose

background is in veterinary medicine. NR, RG, JB, DJ and JC are all native Dutch speakers, whereas TD is a native English speaker who is able to read Dutch. TD used his relative unfamiliarity with the Dutch language to look critically at the written comments, which helped the research team maintain a questioning attitude towards how language was used.

Analysis

Health advocate was not addressed in the feedback system in this setting, therefore the researchers did not have data on this role. Since physicians have always been expected to be medical experts and scholars, formalising the non-technical roles of Communicator, Collaborator, Manager, and Reflective Professional is a novel feature of CanMEDS. The research team therefore chose to concentrate its analysis on those four roles.

NR first made herself thoroughly familiar with the data by reading and re-reading all written comments on all forms. Since the dataset consisted of 3150 written feedback comments on 591 feedback forms and the sheer quantity of data can compromise the quality of critical discourse analysis, NR purposefully selected a subset of data that was likely to be most informative. First she excluded all forms with comments that were not amenable for textual analysis because they were too short, fragmentary, or general; e.g. ‘well done’. After that, she purposively chose the 100 forms (20 from each feedback setting) with 297 written comments, which best illustrated the variation in the texts as the dataset for analysis.

NR and TD led the application of a set of fine-grained critical discourse analysis “tools” (Gee 2014b) to draw attention to significant statements, key words, and metaphors. Two main tools that were used are explained below.

1. *‘Doing and not just saying’* This tool emphasises the notion that any piece of textual communication consists of more than what is literally said. It examines the social effects that each piece of text might be expected to have. For example, a supervisor who commented that a resident had used over-familiar language when speaking to patients was creating greater professional distance between physician and patient.
2. *Significance* this tool can be applied to analyse how language increases the significance of certain things and reduces the significance of others. This was exemplified in the dataset by, for example, underlining words, using punctuation such as exclamation marks or brackets, and sentence structure. The following suggestion for improvement illustrates how significance was

reduced: 'No suggestions. But I would like to point out a pitfall: be aware that you could come across business-like to patients (not necessarily a disadvantage)' The feedback comment begins by stating there are no suggestions for improvement, continues with a formative statement, and ends by saying that the observed behaviour is not necessarily a disadvantage. The net effect of this comment is to sanction 'coming across business-like' within the discourse of medical communication. This example also shows how our discourse analysis was 'critical', because it shows how coming across to patients as 'business-like' is part of the relationship the supervisor builds with the supervisee within the institution of medicine.

First, TD and NR individually open-coded the data concerning Communicator and Collaborator of a random subset of 25 forms—five from each setting—by applying Gee's tools. They read the texts closely and open-coded them with words or short sentences that captured meaning(s) they found in the text. They constantly compared (Glaser and Strauss 2012) their findings and agreed that supervisors were inconsistent in whether they attributed similar observations to the roles of Communicator or Collaborator, which they seemed to use interchangeably. Whilst supervisors' blurring of the two roles was contrary to the intention of CanMEDS, it was so difficult to distinguish them that the researchers decided to put all comments on these roles together for coding, gradually added other roles, and finally arrived at an agreed coding framework for all roles.

Second, NR applied the agreed coding framework to the remaining data. She then resorted the data per role to explore different discourses in the data. She discussed any ambiguities and her findings as a whole with DJ and TD.

Third, all researchers discussed the coded dataset, arriving at preliminary conclusions about how the roles were constructed. NR then re-read all 591 forms to check that important findings were not missing from the purposively selected subset of forms.

Finally, since the researchers had become interested in how the discourses seemed to construct only a peripheral role for patients in the preceding steps, they decided to conduct a fourth and final step. They identified all comments referring to patients, first in the purposive sample and then in the complete dataset. From the complete dataset, feedback provided during 32 Patient Encounters, 12 On-Calls and 11 Morning reports was selected and analysed additionally. NR coded these comments, the researchers collectively agreed how to interpret their meaning.

Presentation of results

The findings are organised by CanMEDS role, drawing together the discourse of each role within the whole dataset. To illustrate our findings, we include quotes, each of which is the full text of an item of feedback for a specific role in a specific setting. Translations of the comments from Dutch to English have been agreed between native speakers of the two languages.

Results

Communicator

Communicating with patients

The discourse for communicating with patients was constructed with a strong emphasis on time-efficiency; for example, finishing a consultation on time. Compassionate aspects of communication, such as showing empathy and comforting, were often coupled with the need for speed: *“Listens well in order to ask smart questions based on the limited information the patient provides. Clearly repeats patients’ conclusions to verify. Comforts a –slightly distrustful- patient in a very good/high pace.”* and: *“Discovered underlying problem well (dead child). Ensured good speed (truncates a clarifying answer in a friendly way)”*.

The discourse included how residents came across: *“Be aware of your use of language (too familiar)”*. It also included how they created room to involve patients in conversations: *“Held a bad news conversation in a calm, empathic, manner with family + patient. Created space for questions and expression of emotions”*.

Communicating with staff

The discourse of communicating with staff also strongly emphasised time-efficiency, being to-the-point, concise and clear, and giving just enough detail without wasting time: *“Your narrative explanation of the essence of the handover sheet was concise and to the point. Despite high speed, good contact with audience.”* Other features of the discourse were, on the one hand, being assertive and exercising leadership, and on the other cooperating and engaging others. Being assertive meant being pro-active, delegating tasks, and telling others what to do. Exercising leadership meant showing responsibility, being in control, and approaching the right people. In the following text, the supervisor equated the metaphor of ‘being king’ with leadership *“Be concrete about the policy. Hand over to the ward. Looking ahead would make you king”*. Cooperation was constructed in terms of being approachable, conferring, and liaising with others: *“Critical about colleagues’ and own performance; but now it is time to propose treatment plans yourself”*. Engaging included having good contact with

others and inviting others to contribute to discussions: *"Focus your presentation (especially during morning reports) a bit more on what you consider to be essential issues. Invite others to be more engaged in the discussion and provide you with feedback"*.

Collaborator

There were two different discourses of Collaborator: a consensual one and one that constructed an imbalance of power in favour of physicians. The consensual Collaborator was a cooperative individual, ready to work with others. Exercising leadership by taking the initiative and being assertive were part of this discourse: *"Pleasant collaboration, gives a sense of a joint undertaking. Great sense of responsibility. Clear communication."* The alternative discourse placed residents in positions of power, as people who were in charge of other people and had to defend their position against others: *"If people do not do what you want, I think you find it difficult to take a 'firm' stance"*. This discourse constructs a firm, directive type of leadership: *"Work on limiting your responsibility and, if necessary, 'resistance'. Articulate assignments more clearly, be more assertive and directive"*.

Manager

The discourse constructed three facets of a Manager: 'managing oneself', 'managing others' and 'managing means'. 'Managing oneself' meant having fore-, back-, and over-sight, being meticulous, and knowing and respecting one's own boundaries: *"Try to do important things first (diagnostics). Make lists, try to schedule tasks. Complete one thing so you can start the next one. Try to be a bit faster."* 'Managing others' meant managing staff, knowing when to consult or check others, and being directive and delegating tasks: *"Extra attention to triage/prioritizing. Don't do everything yourself but allocate/delegate tasks in a directive way!"* 'Managing means' included deliberately choosing diagnostic tests according to how they could contribute to a treatment policy whilst keeping unnecessary tests to a minimum: *"Considers advantages and disadvantages, usefulness of diagnostic tests."* Being goal-directed and taking the initiative in making policy and treatment plans was a consistent feature of the discourse of Manager. The Manager role also constructed physicians as people who work fast and prioritize tasks so everything is completed in time.

Reflective Professional

The discourse of Reflective Professional constructed residents as trainees, members of healthcare teams, and all-round professionals. Residents 'as trainees' were to ask for feedback, ask for help, seek to improve themselves, and know their limitations: *"Maintains good oversight of a broad differential diagnosis. Presents himself as inquisitive and keen to learn (open). Very good discussion of 2 (more) complex cases."* Residents 'as team members' were professionals who were open and approachable,

conferred with others, made decisions in dialogue, but also stood up for themselves and took the lead in discussions: *“Remain critical about patients that are handed over from other colleagues. Is everything correct? Relevant and logical?”* Residents ‘as all-round professionals’ managed time, were critical, had oversight and went deep into problems to make a working diagnosis or treatment plan: *“Fine attitude. Dares to go back to the beginning when hits a dead end.”*

The patient’s role

Patients were relatively rarely mentioned, even when the analysis was extended to the roles of medical expert and scholar. Although patients were not privy to some settings, such as CAT and Oral presentation, settings such as Patient Encounters and On-Call directly involved patient interactions. The absence of patients in these data, whilst a finding in its own right, limits the depth to which the analysis could be taken. Patients were part of the discourses of Communicator, Collaborator, and Medical Expert, but not even mentioned in relation to Manager, Reflective Professional, and Scholar. The relationship between residents and patients was explicitly distant: *“No suggestions. But I would like to point out a pitfall: be aware that you could seem business-like to patients (not necessarily a disadvantage)”* and: *“Is approachable to other professionals. Clear to patient.”* The discourse of Communicator included communicating with patients in friendly ways, and making patients feel comfortable and understood, rather than being comfortable or understood: *“Reflect on patient’s feelings so they will feel better understood”*. Patients tended to be positioned as subjects of communication or collaboration rather than equal participants. The word ‘listen’ was strikingly absent from the discourse – it was used just once in 3150 items of text.

Discussion

Principal findings and meaning

This study has shown that the discourse of physicians, in the authentic workplace settings we studied, constructs the CanMEDS roles in very different ways from what the originators of CanMEDS might have intended. There were three striking differences. First, there was a discourse of collaboration according to which residents were directive towards others, exercising a firm kind of leadership. Although directive types of leadership can be effective in critical or extremely high-workload settings, empowering leadership styles function better in creating a positive climate and increasing cohesion within functioning teams (Kuenzle et al., 2010). Second, the discourses of all CanMEDS roles were dominated by efficiency; being fast was considered essential. Even aspects of patient communication, such as showing empathy and asking questions, were counterpoised with comments on speed. This finding should be taken into account in on-going conversations about healthcare systems, which have

to become more efficient whilst, at the same time, paying more attention to non-technical skills and patient-centred behaviour. Third, physicians' contribution did not go beyond behaving kindly towards patients; patients were positioned as objects in the periphery rather than participants at the centre of care. This is an important finding since patient-centred approaches and mutual, reciprocal, relationships between patients and physicians are associated with a higher quality of care (Mead & Bower, 2000; Bleakley, 2014).

There were other discourses that were in line with what was intended in the original framework. The discourse of Manager emphasised ordering diagnostic tests thoughtfully and not being wasteful whilst gathering enough information to make diagnoses and keep patients safe. CanMEDS describes its roles as intertwined with one another, which is in line with how supervisors constructed them as rather blurred. Although some roles (Reflective Professional, Manager) were constructed in a more limited fashion in our data than in the original CanMEDS framework, this was often compensated for by feedback on other roles. It appears that there is some unifying discourse of 'a good physician' that can be viewed through different competency spectacles to highlight certain aspects of practice or performance. This aligns well with common critique that in the CanMEDS framework the complex profession is rather artificially divided into seven roles, whereas the reality is that roles overlap and complement each other (Whitehead et al, 2013).

Strengths and limitations

A distinctive feature of this study was the detailed textual analysis of relatively fragmented data. Pressure of time obliged physicians giving feedback to express what they saw as key points in limited words, and therefore the fragmentary data indicate what was considered most important. Another strength is that these data are the original feedback which the residents received. Although other methods, such as interviews or focus groups, might result in a more complete articulation of the discourse, these methods would also allow for more socially desirable responses whereas our naturalistic data reflect the actual process-in-action. We must acknowledge, however, that although we received feedback forms from all 120 residents, they were able to choose (not) to submit certain copies of their feedback forms for inclusion in our analysis so some unseen bias might have operated.

The varied backgrounds and roles taken on by members of the research team in analysing the data increased the rigour in this study. Qualitative analysis is an inherently subjective process, and we cannot guarantee that a different team would have arrived at the same conclusions. However, we worked together as a team, capitalising on how our different backgrounds gave different perspectives on the data.

Our conclusion that patients were marginalised in the discourse was undoubtedly influenced by the data having captured conversations between physicians. Whilst we can draw no conclusions about the conversations that might have gone on between a teacher, a resident, and a patient, we can draw the conclusion that the discourse of the CanMEDS roles in this context does not give patients a central place.

Implications for practice and future research

This example of how outcomes-based education operates in practice highlights that defining learning outcomes and using them to structure a curriculum does not automatically result in the intended changes in practice. Although the qualitative methods we used in this study do not aim to produce generalizable results, our findings may be transferable to other settings (Kuper et al, 2008). Therefore, in light of these findings, it seems reasonable to suggest that greater engagement of supervisors in the development of competency frameworks and training to help them better understand the roles, would be appropriate steps to take. Supervisors' feedback could benefit from making the original goals of CanMEDS more explicit. However, we cannot say how effective these actions would be without conducting further research.

Another avenue for future research would be to study how the role of Health Advocate is constructed in practice. The feedback system used in this study did not generate feedback on this role. Analysing the discourse of this role in practice and especially the position of patients within it could complement this study.

Conclusions

It is striking that supervisors' discourses constructed a tension between being patient-centred and being time-efficient. Since we do not know whether that tension is inevitable, it is a matter for further research. It is questionable, however, whether such a high-pressure environment is a fitting place to engender patient-centred attitudes. It seems challenging for residents to combine the roles of a well-functioning physician and a trainee in a setting that focuses so strongly on being fast and to-the-point. Asking a supervisor to spend valuable time to explain something or observe and give feedback in such a time-pressured setting could be difficult for residents. Spending as little time as possible with a patient while trying to manage to listen, comfort and deliver high quality care is certainly a challenge.

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Chapter 5

Integrated and implicit: How residents learn CanMEDS roles by participating in practice.

NIENKERENTING

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Abstract

Context

Learning outcomes for residency training are defined in competency frameworks such as the CanMEDS framework, which ultimately aim to better prepare residents for their future tasks. Although residents' training relies heavily on learning through participation in the workplace under the supervision of a specialist, it remains unclear how the CanMEDS framework informs practice-based learning and daily interactions between residents and supervisors.

Objectives

This study aimed to explore how the CanMEDS framework informs residents' practice-based training and interactions with supervisors.

Methods

Constructivist grounded theory guided iterative data collection and analyses. Data were collected by direct observations of residents and supervisors, combined with formal and field interviews. We progressively arrived at an explanatory theory by coding and interpreting the data, building provisional theories and through continuous conversations. Data analysis drew on sensitising insights from communities of practice theory, which provided this study with a social learning perspective.

Results

CanMEDS roles occurred in an integrated fashion and usually remained implicit during interactions. The language of CanMEDS was not adopted in clinical practice, which seemed to impede explicit learning interactions. The CanMEDS framework seemed only one of many factors of influence in practice-based training: patient records and other documents were highly influential in daily activities and did not always correspond with CanMEDS roles. Additionally, the position of residents seemed too peripheral to allow them to learn certain aspects of the Health Advocate and Leader roles..

Conclusions

The CanMEDS framework did not really guide supervisors' and residents' practice or interactions. It was not explicitly used as a common language in which to talk about resident performance and roles. Therefore, the extent to which CanMEDS actually helps improve residents' learning trajectories and conversations between residents and supervisors about residents' progress remains questionable. This study highlights the fact that the reification of competency frameworks into the complexity of practice-based learning is not a straightforward exercise.

Introduction

Medical specialists help residents learn the roles and behaviours of their specialty during postgraduate training by allowing them to participate in their patient care practice. In order to direct residents' learning in this complex setting, professional roles are defined in competency frameworks such as the CanMEDS framework.^{1,2} By focusing on the ultimate outcomes of physician performance, competency-based medical education aims to produce professionals who are more responsive to the needs of society.³⁻⁵ The CanMEDS slogan 'Better standards. Better physicians. Better care' illustrates its implicit assumption that assessing competencies will improve physician performance.¹ Within an increasingly influential paradigm in which training programmes are considered to be accountable to society, competency frameworks are commonly advocated as assessment standards for professional performance.⁶⁻⁹ On the understanding that assessment drives learning,¹⁰ a great deal of valuable effort has been directed towards the development of instruments to assess the performance of residents. How residents are expected to learn to take on the CanMEDS roles, however, is not specified in the framework. Little is currently known about how residents actually learn CanMEDS roles in practice-based training.

There is a well-established understanding of the significance of practice-based learning for residents. Residents gradually take on increasingly important roles in a patient care practice, with support from their supervisors.^{11,12} Many CanMEDS roles, such as those of Health Advocate, Leader, Communicator and Collaborator, are considered roles that can be learned only by participating in the workplace.^{13,14} A growing body of literature about practice-based learning is beginning to unravel important, often tacit, learning processes.¹⁵⁻¹⁷ Teunissen et al. describe how clinical activities are the starting point for residents' learning, followed by processes of 'interpretation' and 'construction of meaning', during which interactions with supervisors and others are important.¹⁸ Social theories of learning, particularly that of communities of practice, provide us with an understanding of the significance of social participation for practice-based learning.¹⁹ Communities of practice theory holds that in practice-based learning, the practice itself has the most influence on what is learned, rather than any outside definition of competence. The way CanMEDS roles are enacted in practice would therefore be of major importance to how residents learn them. Whether competency frameworks such as that of CanMEDS actually add anything to practice-based learning may therefore largely depend on how they are adopted in clinical practice by residents and their supervisors.

Although we were unable to find any studies that have explored specifically how the CanMEDS roles and the behaviours they promote come to life in practice-based learning outside assessment situations, some studies have revealed certain conceptual issues regarding assessment that may be transferred to daily practice-based learning. Despite intensive efforts, the development of quantified, standardised measures of all aspects of physician performance has turned out to be difficult to realise.²⁰⁻²³ Assessment instruments often remain unreliable, are unable to distinguish between the roles and fail to achieve a balanced representation of the competency framework.^{6, 24} A possible explanation for these struggles is that supervisors have different, more complex conceptions of competence than those described in competency frameworks. In a previous study, we found that supervisors defined CanMEDS roles more in terms of their socio-historical backgrounds, personal experiences and beliefs than in terms of how the roles are described on paper.²⁵ Another study showed that supervisors have a complex and holistic view of competence, in which individual CanMEDS roles cannot be distinguished from one another.²³ Supervisors view residents' competence in more complex ways than the 'simple linear addition' of performance in different CanMEDS roles.²³ It is possible that these differences in conceptions of competence affect residents' practice-based learning, although it remains unclear how.

This grounded theory study aimed to develop an explanatory theory of how competency frameworks, such as CanMEDS, influence daily practice-based learning.

Methods

Conceptual Orientation

This study approached practice-based learning from a socio-cultural perspective, which acknowledges learning as the outcome of social processes.^{26,27} Wenger's theory of communities of practice applies well to the complex setting of residents' practice-based learning as judged by researchers' increasing use of it in this domain.^{19, 27-30} In communities of practice theory,¹⁹ learning is described as a result of social participation in a professional community's practice. A community of practice is described as a group of people who have developed a shared practice over time by working and learning together.

Communities of practice theory¹⁹ provided sensitising insights for the constructivist grounded theory methodology adopted for this study. These related to identity formation, negotiation of meaning and the shared regime of competence of a community of practice. The courses of learning followed by residents in their participation in different departments and hospitals shape their identities as medical specialists and give meaning to medical practice and procedures. This shared practice is embodied in a regime of competence that usually remains tacit. A competency framework that defines professional

roles can be considered as a formal description of the 'ideal' regime of competence of a clinical community. Although this formal description is not part of the socio-cultural history of that community, it is a potentially influential artefact. How CanMEDS roles are given expression in a clinical workplace depends on a process called negotiation of meaning, through which community members make sense of an artefact of the community for their specific context.

Study design

For this grounded theory³¹ study, data were collected and analysed iteratively. Qualitative data were collected through direct observations of daily interactions between supervisors and residents, brief field interviews and in-depth formal interviews. These methods align particularly well with communities of practice theory, given that it was developed on ethnographic and anthropological foundations.¹⁹

Context

Data for this study were collected at internal medicine residency programmes in the Netherlands. In 2009, the Dutch Internists Association initiated the use of CanMEDS as a foundation for training programmes on a national level. This was an important shift from a focus that concentrated solely on knowledge about diseases to one that incorporates generic competencies into the training programme. The association expected this innovation to ease the transition from graduate training and to better prepare internal medicine residents for their future careers. Learning goals, teaching methods and assessments are prescribed for each CanMEDS role.³²

This study was performed in the internal medicine departments of three hospitals: a university medical centre, and two affiliated teaching hospitals. Patients were treated by residents under the supervision of attending internists on medical wards, medium care units, emergency rooms and in out-patient clinics. Around 20–25 patients in a ward were allocated to two or three residents under the supervision of one attending physician.

The boundary of a community of practice, which defines who is a member and who is not, is typically dynamic and implicit.¹⁹ For this study, a community of practice was described as a team of clinical supervisors, residents, interns, nurses and patients on a ward or unit, who collaborated together in the practice of patient care. Clinical supervisors represented the core group in communities in which residents were active participants. Interns and nurses were more peripheral participants. Patients, who came and went frequently, had a more transactional relationship with these communities of practice.

Research team

The team comprised medical education researchers (NR, ANJR, MAVdW, ADCJ, TD), internal medicine specialists with extensive experience in supervising residents (ROBG, JCCB, TD) and a social learning theorist (EW-T). ROBG, JCCB and ADCJ have all been closely involved in the design and implementation of CanMEDS-based curricula. ROBG and JCCB were two of the designers of the CanMEDS-based postgraduate internal medicine training programme that was the context of this study. TD had a more critical stance towards the utility and necessity of competency frameworks in the team's scholarly discussions.³³ The founder of communities of practice theory, EW-T, used his expertise in social learning and his relative unfamiliarity with clinical workplace settings to discuss the meaning of our data critically. The observers comprised an educationalist (NR) and a psychologist (MAVdW), both of whom were PhD students in the field of medical education, which supported an open-minded approach towards the clinical workplace and particular attentiveness to situations influential in residents' learning.

Recruitment of participants

The study was introduced to residents and supervisors with an e-mail and a short presentation informing them about the study. Participants were asked to volunteer. Additional participants were recruited by follow-up contact with the wards. Initially, supervisors who were indicated by residents as having special influence on their learning were approached to participate. Participants who were likely to offer a contrasting perspective to preceding participants were purposely selected by theoretical sampling until the sample was judged to be sufficient. For instance, the initial group of participating supervisors were relatively unfamiliar with the CanMEDS framework; therefore, supervisors who were more aware of CanMEDS were actively recruited. To establish a balanced participant group, supervisors and residents from various internal medicine-based specialties, such as nephrology and endocrinology, and with different levels of experience were recruited.

Data collection

Direct Observations

Participants were observed on duty in their wards, emergency rooms and out-patient clinics. The observers dressed in hospital uniform. The observers used the marginal-participant technique, which meant they tried to blend in and to avoid influencing the social setting as much as possible.³⁴ They made detailed notes of the following to facilitate inductive analysis: actions; outlines of conversations; positioning and set-up of rooms; body language; facial expressions, and emotions. These detailed notes allowed for the analysis of, for instance, participants' verbal messages in conjunction with their

body language, tone of voice and facial expressions. The observers did not know the residents or supervisors they observed. NR and MAvdW started by individually observing different wards and discussing their findings. In the course of sharing their notes after several days of observations and reflecting on their impressions, they found enough similarity in what they had observed for just one observer (NR) to continue the study. The iterative process of discussing notes and collecting data helped to identify preconceptions reflexively and to put the findings in a broad context, and informed further data collection.

Field interviews

At suitable moments during the direct observations, the observers conducted field interviews by asking clarifying questions (e.g. about what a certain procedure meant), reasoning questions (e.g. about why a supervisor intervened in a conversation), and circumstantial questions (e.g. about how the researcher's presence influenced the situation). They made notes about field interviews during or shortly after the interviews. The researchers were careful not to interfere with social processes by only asking questions during field interviews in quiet one-on-one situations, such as when walking with a participant to a meeting or another ward.

Formal interviews

An intensive interview technique was used for the formal interviews with residents and supervisors.³⁵ During the first half of the interview, the researcher asked broad, open questions to allow the participant to speak freely (e.g. 'How do you experience your combined tasks of working as a physician and learning as a resident?' and 'How are your supervisory tasks facilitated?'). More directed questions about CanMEDS and practice-based learning were asked during the second half of the interview (e.g. 'What, if anything, do you know about CanMEDS?' and 'How do you use CanMEDS when you are supervising residents?'). The researchers brought examples of the observational data into the interview (e.g. 'Could you reflect upon what happened during rounds, when your two supervisors told you to be more concise?'). The interviews lasted approximately 60 minutes. Interviews were audio-recorded and transcribed verbatim.

Analysis

Data analysis started during the first fieldwork period and continued up to the writing of the results section. An inductive approach to data analysis was adopted in three successive steps: familiarisation with the data; open coding to identify domains, and axial coding to identify connections between the domains and themes within them. Once the coding scheme had been refined, the complete dataset was analysed for relationships between themes and to explore the reasons for discrepant data.^{31,35} This study benefited from the research team's varied backgrounds in the analysis of the rich data and

in the process of making sense of the cultural characteristics of the clinical workplace. Discussions about what recurring patterns in the data meant, whether there were any tensions or interconnections between interpretations of situations, and how they related to previous understandings took place among team members. These discussions were informed by the research team's professional experiences and insights from communities of practice theory into residents' identity formation, the clinical workplace community's shared regime of competence and how, mostly supervisors, negotiated about the meaning of CanMEDS. We sought to improve the study's rigour through constant comparison of our interpretations and coding. An explanatory theory was developed gradually through these continuous discussions.

Results

Participants

The practice-based training setting was observed for a total of 136 hours. Twelve residents and 14 supervisors were included in the study. Their subspecialties, experience and years spent in training are presented in Table 1.

Table 1. Participant Characteristics

RESIDENTS					
Gender	Experience^a	Observed	Field interview	Formal interview	Specialty
Female	1	Ward	Yes	Yes	Hospital
Female	2	Ward	Yes	No	General Internal
Male	3	Ward, ER	Yes	Yes	Cardiology
Male	1	Ward, ER	Yes	Yes	General Internal
Female	2	Ward, ER	Yes	Yes	Pulmonology
Male	2	Ward	Yes	Yes	Cardiology
Female	4	Policlinic	Yes	No	General Internal
Female	1	Ward, ER	Yes	No	Rheumatology
Female	1	Ward	Yes	No	Cardiology
Male	3	Policlinic	Yes	Yes	General Internal
Female	2	Ward, ER	Yes	No	Hospital
Female	3	Ward, Policlinic	Yes	No	Pulmonology
SUPERVISORS					
Gender	Experience^a	Observed	Field interview	Formal interview	Specialty
Male	>20	Ward	Yes	Yes	Nephrology
Male	5-10	Ward	Yes	Yes	Vascular
Male	>20	Ward	Yes	Yes	Vascular
Female	5-10	Ward	Yes	No	Geriatrics
Male	15-20	Ward, ER, Policlinic	Yes	Yes	Endocrinology
Female	0-5	Ward, ER	Yes	Yes	Nephrology
Male	5-10	Ward, ER	Yes	No	Nephrology
Male	>20	Ward, Policlinic	Yes	Yes	Nephrology
Female	10-15	Ward	Yes	No	Nephrology
Male	15-20	Ward, Policlinic	Yes	Yes	General Internal
Female	10-15	Ward	Yes	No	Geriatrics
Male	15-20	Ward	Yes	No	Nephrology

Presentation of results

We identified three main aspects in our dataset: residents' activities; interactions, and organisational structures. We now describe and illustrate these with extracts from the interviews and field notes.

CanMEDS and residents' activities

The professional attitudes and behaviours advocated in the CanMEDS framework were ubiquitous in clinical practice. Residents typically combined aspects of multiple CanMEDS roles in their clinical activities. Consistent with the caveat noted by the initiators of CanMEDS that the roles are intertwined with one another, the roles were always closely integrated with one another. Health Advocate rarely occurred without Communicator and Medical Expert. Collaborator, Leader and Professional were generally intertwined with the Scholar and Medical Expert roles.

When residents encountered problems that fell within the roles of Leader (formerly Manager) and Health Advocate, their practice did not usually go beyond identifying the problem. More advanced aspects of these roles, such as 'initiating improvement and responding to needs of patients beyond the clinical environment',¹ seemed to be beyond their reach. This is illustrated by the fragment below, in which the resident notes an issue in the Health Advocate role that her supervisor also seems unable to resolve:

A patient, released from the ward, explained that she had to walk back to the refugee camp she lived in, about 10 kilometres away, because she did not have money for a taxi. The resident reasoned that this was potentially harmful for the patient. She asked her supervisor whether the hospital could facilitate her return home. They reckoned there was no general arrangement for this.

Residents', and possibly even supervisors', positions within the hospital structure seemed too peripheral to allow them to take actions representing advanced aspects of the Leader role. The following fragment shows how a resident was required to draw on such an aspect of the Leader role:

A weekly multidisciplinary meeting was scheduled at the ward. A resident noticed that it was inconvenient that the nurses were not present because they had the most recent knowledge of the patients' status, and policy was being set based upon outdated information. He discussed this with the nurses, but they said they were too busy to attend. Later, during a formal interview, his supervisor stated that he had also tried to solve this problem, but had not succeeded so far.

CanMEDS and interactions

Interactions with other members of the community of practice, especially peers and supervisors, helped residents to define what they had learned from the activities in which they participated. These interactions did not explicitly reflect the CanMEDS roles, but generally aligned well with the attitudes and behaviours advocated in them.

During a patient encounter, a patient told lively stories about herself. Afterwards, in the hallway, the resident said: 'Interesting stories... Why didn't you interrupt her?'

Supervisor: 'Did you notice she told me about school in 1904 and how she met her husband in 1911? That was before she was born. Many residents ask patients to tell them where they are to test whether they are confused. But that can be uncomfortable for patients. Just letting patients tell their stories is often very revealing.'

As this example illustrates, CanMEDS roles usually remained implicit during supervisory interactions, even when the interactions were explicitly aimed at educating residents. The names of CanMEDS roles were rarely mentioned outside formal assessment situations: we heard a role being named only twice during the 136 hours of observations. In the fragment below, a supervisor discusses behaviours underlying multiple CanMEDS roles (Collaborator, Leader, Medical Expert) without mentioning them:

A standard test indicated a bacterial infection. Further tests were needed to identify whether they had caused an infection. The resident said he wanted to admit the patient and treat the bacteria before the results returned. He asked a microbiologist for advice.

Supervisor: 'The patient's urogenital system looks fine, but the microbiologist does not know that, and you obliged him to advise. These bacteria are everywhere, and the patient is feeling well. At this stage, you should not request help from microbiologists or pharmacists; that just needlessly increases the care costs. You have to make an educated guess based on the patient's status. They are not in charge of the patient; you are!'

Neither did the supervisors use the CanMEDS roles to discuss the residents' performance with one another. Supervision was often handed over from one supervisor to the next in rather general language (e.g. 'She will not create a lot of work for you' or 'She really needs to know her facts better'). Other forms of discourse, such as evidence-based medicine and shared decision making, were, by contrast with the CanMEDS roles, part of the shared language and seemed more influential in practice-based learning.

CanMEDS and organisational structure

The residents' practice-based learning took place in an environment that was primarily focused on patient care. This focus at times caused friction between the various CanMEDS roles. For example, schedules seemed to be arranged mostly to serve the hospitals' personnel planning, but impacted on practice-based learning. When residents were scheduled to attend at a ward for longer periods, the residents' studies and conversations with their supervisors were in-depth and concerned aspects of the various CanMEDS roles. However, when residents moved from one department to the next more quickly, attention shifted to what was most necessary and was often limited to the role of Medical Expert, discarding the others.

During a field interview, a resident said:

'I am scheduled at this ward for only one week. I am in survival mode right now. I barely have time to read up the patient records, let alone do any other work besides seeing patients. I just hope I will not make any serious mistakes in my diagnoses or treatments.'

Certain organisational artefacts seemed to impact on practice-based training. Electronic patient records were of particularly significant influence in terms of which CanMEDS roles were discussed. During daily supervisory interactions, residents and supervisors would typically sit at a computer and go through patient records. The design of these records guided these conversations and thus implicitly defined which roles were discussed. The three hospitals in the study used different patient record systems, and hence the conversations between supervisors and residents were structured differently at each hospital. Certain patient record systems appeared to narrow the conversations strictly to Medical Expert, whereas others led to the incorporation of a wider range of roles. Checklists for certain procedures or meetings also influenced these specific interactions. In one of the hospitals, all meeting rooms had a checklist on the table. This checklist listed topics to be discussed for each patient (e.g. diagnosis, home situation, whether or not cardiopulmonary resuscitation was necessary). Meetings (i.e. multidisciplinary meetings, handovers) at which this checklist was used generally covered more CanMEDS roles than meetings without such a checklist.

Discussion

Principal findings and meaning

This study has shown that, in the settings studied, the CanMEDS framework did not really inform residents' practice-based learning outside formal evaluation moments. In line with theory and previous studies, residents learned to take on professional roles through participating in activities and interactions with members of the community of practice.^{18,19} During these activities and interactions, CanMEDS roles were carried out in an integrated way and were not addressed explicitly. This is an important finding because being explicit about what is expected of learners is considered to facilitate learning.^{28,36} Furthermore, the language of the CanMEDS roles was not adopted in the clinical workplace. At the same time, considerable differences between what types of behaviour individual supervisors expected from residents were ubiquitous. The lack of a shared language seemed to hamper the development of a regime of competence for resident performance, which is one of the key features of a community of practice.¹⁹ This is an interesting finding as providing supervisors with a common language in order to reduce their cognitive load during teaching obligations is considered a major possible benefit of competency frameworks.³⁷ In addition, this study has shown that although the clinical workplace is a very rich learning environment, certain organisational aspects, such as personnel planning and scheduling of meetings, occasionally interfere with residents' learning as it is described in the CanMEDS framework.

Theoretical interpretation

The CanMEDS framework can be regarded as a social artefact developed in its creators' community of practice, which has travelled to other communities around the world. How the framework informs residents' practice-based training seems largely to depend on how it is adopted in the community. By negotiating the meaning of the CanMEDS roles, members of the community position it within their shared regime of competence. The extent to which the CanMEDS roles informed comprehensive practice-based training seemed rather limited within the communities of practice observed. The CanMEDS framework did not appear to guide the residents' activities or supervisory interactions outside formal assessment situations.

The names of the CanMEDS roles did not provide members of the community with a shared language in which to discuss resident performance, which may make the roles less useful than expected. This may be because the processes of negotiation of meaning could be facilitated better, but it may also relate to the intertwined nature of the roles. Even in the simple and brief activities we observed, residents were required to draw upon aspects of multiple roles at the same time. This makes

determining where a certain role ends and where others begin rather unclear, which may make them less useful for explicit teaching.

CanMEDS roles sometimes seemed to represent descriptions of roles within an ideal world, which did not align well with the reality of clinical practice. Although most activities and interactions were in line with the practice described in the CanMEDS framework, the residents', and perhaps even the supervisors', roles within the hospital organisation seemed too peripheral to allow actions that reflect advanced behaviours falling within, especially, the Leader and Health Advocate roles. The physicians' agency seemed to be more limited by hospital structure in those roles, compared with what is described in the framework. Furthermore, this 'ideal' practice described by the CanMEDS framework seemed to contradict other informative, organisational elements within the community. CanMEDS roles were only one of many factors that influence practice-based training.

Strengths and limitations

The data for this study were collected through a rigorous combination of direct observation and in-depth participant interviews. Observational research is, however, often criticised for being prone to observer effects. There is a risk that the researchers' presence may have affected the behaviour of our participants. By investing in the relationship with our participants while interfering with the social situation as little as possible, the researchers aimed to mitigate effects on participants' behaviour.³⁸

Communities of practice theory provided a useful analytical lens for this study. The concepts of identity, regime of competence and negotiation of meaning helped us to study reflexively how CanMEDS informs residents' practice-based learning. A boundary of communities of practice theory in this study may be that it does not explicitly signify assessment as being highly influential for practice-based learning, whereas within the medical education domain assessment is generally accepted as one of the most powerful learning tools. The interpretation of practice-based learning would have been more assessment-oriented if we had taken on a more behaviouristic orientation. The use of sensitising insights from communities of practice theory directed us towards meaningful interactions between residents, supervisors and residents, and patients and residents, which are considered highly influential for residents' learning.

The professional but non-medical background of the observers helped them to approach practice-based learning with open minds and to ask questions about aspects that others might have taken for granted. By profiting from our various professional backgrounds and perspectives on the data during interpretations, we feel it is reasonable to draw the conclusions we have arrived at based on the data obtained. Rather than presenting generalisable results, we aim to present professional situations that

others will recognise and we believe our critical interpretations will contribute meaningfully to the ongoing debate about outcomes-based residency training.

Although the findings presented in this paper apply to all three of the contexts observed, there is no guarantee that they are transferable to other settings. We aimed to increase the study's rigour by incorporating multiple sites. This was limited, however, to internal medicine departments in a Dutch context. It is therefore up to the reader to assess how the theoretical constructs arrived at might apply to his or her specific setting. It is conceivable that some of the findings are typical of all clinical settings, but our experience indicates that the organisational context, a very local factor, is of major importance in practice-based learning.

Implications for practice and future research

In order that the possible benefits of competency frameworks can be maximised, they must be aligned better with comprehensive clinical practice. It appears that the terms of the CanMEDS framework need to better reflect the reality of clinical practice. At the level of interactions between supervisors and residents, this means that the adoption of CanMEDS roles as the basis for a common language in which to discuss competence may make tacit messages more explicit. At the level of supervisors' discussions amongst themselves, a common language might facilitate negotiation of meaning and deliberate supervisory handovers, and therefore increase continuity in residents' learning. At the hospital level, the impact that organisational aspects such as schedules and patient records have on resident learning should not be underestimated. Aligning these organisational aspects with the CanMEDS framework may allow more beneficial effects to be derived from competency-based training. In the context of the CanMEDS roles being used as an educational innovation, careful observation of the clinical practice of a specific context and associated adjustments of the names of the roles may be beneficial. Furthermore, this study's findings regarding the integration of CanMEDS roles in clinical practice may contribute to the empirical underpinnings of the implementation of entrustable professional activities.³⁹ The use of a comprehensive clinical activity as the basis for assessment, rather than a combination of multiple CanMEDS roles, might indeed better align with the reality of practice-based learning.

Conclusion

A competency framework, in this case CanMEDS, seems to be only one of many artefacts that influence how residents learn in a community of practice. Although many supervisory interactions were in line with the presumed intentions of the initiators of CanMEDS, the framework does not appear to guide supervisors or residents. It is therefore questionable whether the implementation of CanMEDS-based training has caused a shift in practice, or whether the CanMEDS framework simply fitted a practice that was already changing in that direction. Although CanMEDS may be an appropriate tool for the assessment of residents' professional performance, it seems less useful to guide comprehensive practice-based training.

Contributors

NR led the design of the study, the collection and analysis of data and the writing of the paper. ANJR contributed significantly to the design of this work, the gaining of ethical approval, the analysis and interpretation of data and to the drafting of the paper. TD contributed to the study design, provided solid methodological and theoretical insights, and contributed to the interpretation of data as they were translated into English. EW-T provided important theoretical insights in the designing of the study and the interpretation of data. MAVdW contributed to the study design, the gaining of ethical approval, and to the collection and analysis of data. JCCB contributed to the methodological design of the study and the interpretation of data. ROBG provided the context in which this study was performed and contributed to its methodological design, and to the analysis and interpretation of data. ADCI supervised the first author throughout the entire process, contributed to the design of the study and the obtaining of ethical approval, and provided feedback during the iterative process of data collection and analysis. All authors contributed to the critical revision of the paper and approved the final manuscript for publication. All authors have agreed to be accountable for this work.

Ethical Approval

This study was approved by the ethical review board of the Netherlands Association for Medical Education [2015/502]. Informed consent was obtained from all participating and observed residents, supervisors, nurses and patients, and confidentiality was guaranteed.

Conflict of interest

The authors report not conflict of interest.

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Chapter 6

General discussion

Principal findings

This thesis started with the observation that medical specialist education is changing towards competency-based approaches in order to prepare future medical specialist for a broader range of roles to fulfil. The primary rationale for developing competency frameworks for medical education is to ultimately improve quality of care by expanding the focus beyond medical expertise towards the explicit incorporation of so-called ‘intrinsic competencies’ like collaboration and health advocacy (Sherbino et al., 2011). It is not the aim of this thesis to praise or criticise competency-based approaches to postgraduate medical education. Instead, it rather aims to explore how programmes informed by it, operate in clinical practice. Such an understanding was largely missing from the literature when we set out the empirical studies of this thesis. Herewith, this thesis contributes to medical education literature from different philosophical, theoretical, and methodological stances. We deductively approached how to assure the defined competencies are addressed and inductively studied how competency-based approaches inform residents’ learning at the clinical workplace. These studies combined show how important barriers to the implementation of competency-based medical education can be tackled, and what challenges remain to be addressed.

We studied competency-based postgraduate training along two main theoretical strands of workplace learning, namely 1) how to guide residents’ learning through formal feedback during evaluations and 2) studying their learning from working in clinical practice under the supervision of a medical specialist. The first two research projects we undertook were quantitative studies to examine the quantity and quality of feedback on CanMEDS roles using a structured feedback system and the effects of an accompanying faculty training. While we collected these longitudinal data over a period of two years, we began to conduct two qualitative studies to unravel how CanMEDS roles are socially constructed in practice-based learning in general and in written feedback specifically.

The findings of the studies in this thesis indicate that although some efforts lead to promising results, an expanded focus, that not only focuses on medical expertise but encompasses all CanMEDS roles, may not readily be achieved. On the one hand, improved feedback on the defined competencies can be accomplished with carefully designed feedback systems (Chapter 2) and faculty training (Chapter 3). On the other hand, the extent to which CanMEDS actually impacts workplace learning practice may be rather limited. The intrinsic competencies remained underexposed (Chapter 2), were constructed in feedback in such a way that the original intentions were not met (Chapter 4) and did not seem to have become an integral part of practice in the clinical workplace (Chapter 5). The studies in this thesis have revealed that meaningfully implementing competency frameworks into postgraduate medical

training is a complex exercise that may require a more extensive cultural change of clinical workplace practices.

In this discussion, I will first discuss lessons learned for advancing feedback on professional roles during formal evaluations and subsequently describe our findings regarding learning by participation in the clinical workplace. I will continue to discuss the methodological considerations and implications for practice and future research we can draw from that. In the final conclusion, I will argue that CanMEDS probably should not be considered a set of standards that will change the medical profession, but rather as a reflection of change that is already happening.

Advancing feedback on professional roles

The promise of feedback sounds so simple: provide residents with information about their performance on the different CanMEDS roles, highlight both strengths and areas for improvement, and they will continue their learning trajectories with a clear direction for optimal professional development. Unfortunately, residents and supervisors alike recognise that the reality of giving and receiving feedback is just not that straightforward (Ginsburg et al., 2011, Chaudhry et al., 2008). Although feedback after direct observation is considered one of the most powerful learning tools in residency, we know from both literature and practice that the common reality is that direct observation and feedback in postgraduate training happens infrequent and is often of poor quality (Holmboe, 2004, Lurie et al., 2009; Holmboe, 2015). It seems that this is in part due to the individuals involved in feedback encounters (Leslie et al., 2013; Holmboe et al., 2011) and in part to the clinical workplace culture (Watling et al., 2013). The studies in this thesis make only a modest contribution to the considerable existing literature about feedback and direct observation (e.g., Pelgrim et al., 2011; Ahmed et al., 2011; Lurie et al., 2009; Veloski et al., 2006). They convey, however, a hopeful message, namely that it is possible to organise regular high-quality feedback from supervisors to residents on CanMEDS roles.

Making feedback business as usual

Our studies showcase that feedback and direct observation should be approached systematically and achieved with careful consideration of individual and organisational values in order to overcome barriers that may arise. Watling et al., (2016) describe autonomy and efficiency to be important cultural values that may hinder adoption of regular direct observation in daily practice, which is in line with our findings (Chapter 5). As a result of this, both residents and supervisors seem to have their reasons to refrain from initiating direct observation as reported in previous literature. Literature indicates that residents perceive a significant amount of anxiety during direct observation, fear of

possible consequences if deficiencies are uncovered but also fear to bother busy supervisors too much (Gauthier et al., 2018; LaDonna et al., 2017). Simultaneously, Rietmeijer et al. (2018) showed that general practice supervisors also hesitate to initiate direct observation because they are afraid residents might feel mistrusted and jeopardised in their autonomy. Therefore a system with a solid foundation of planned direct observations and added tailored direct observations where needed, as we present in Chapter 2, seems a viable way to go about it. Regularly planned observations become part of ‘business as usual’ and make direct observation less scary. Additional tailored observations should be mutually agreed between residents and supervisors, and optimally support learning by responding to residents’ individual learning needs. The feedback system we designed fits both the reality of busy clinical practice and respects the autonomy of residents, and in addition to that respects the cultural values of autonomy and efficiency.

The feedback system we developed constituted direct observation of residents in a variety of authentic professional situations to provide them with immediate and specific feedback (Chapter 2). The objective of the system is to make direct observation and feedback part of the routine and let supervisors and residents share responsibility. Herewith, direct observation and feedback become more predictable and commonplace, which might reduce fear and anxiety (LaDonna et al., 2017). Residents and supervisors took on the shared responsibility to engage in formative feedback conversations every month, assuring its legitimate adoption in the clinical workplace learning culture (Carraccio et al., 2002). Five professional situations were determined to jointly cover all CanMEDS roles, to facilitate the translation of generic competencies to clinical practice. Taking the critical components of the transition towards competency-based training into account (Iobst et al., 2010), this feedback system is a beneficial instrument to adopt CanMEDS into postgraduate training programmes. With the system, supervisors provided regular feedback on the defined CanMEDS roles

Quality and content of feedback on CanMEDS roles

With the implementation of such a feedback system, clinical supervisors have to observe residents’ performance and provide them with feedback in terms of CanMEDS roles. Although direct observation has great learning potential, learning does not occur simply because a supervisor observes an activity. So how can we make sure direct observation realises its full learning potential instead of being just a waste of valuable time? It may very well be that the term ‘direct observation’ still brings an image to mind of what anthropologists have been doing for over a century: essentially becoming a metaphorical ‘fly on the wall’ by quietly observing and affecting the situation as little as possible. An attending physician can never become this unnoticed fly, and is, fortunately, much more valuable for residents’ learning when taking on an active role. A further step in the translation of the CanMEDS roles to

feedback conversations was therefore made during a faculty training session, accompanying the implementation of the feedback system (Chapter 3).

Faculty development is frequently considered an essential missing link in competency-based medical education (Leslie et al., 2013; Holmboe et al., 2011), but developing a feasible and effective training has been difficult (Rubak et al., 2008; Junod et al., 2013; Windish et al., 2007). Our short, and therefore feasible, training session helped importantly improve the quality of supervisors' feedback. It focused on both the content of feedback conversations as their procedures. Supervisors were invited to approach feedback conversations as explicitly bidirectional and practised turn-taking and asking probing questions in a simulated setting (Chapter 3), which is in line with other research (Rietmeijer et al., 2018; Gauthier et al., 2019). Another interesting finding of this study is that while initially, only the quality of trained supervisors feedback improved, after half a year this seemed to have disseminated to supervisors that did not participate in the training session. It remains a topic for future research, but it is possible that training half of the clinicians was a sufficient critical mass to let providing high-quality feedback become a structural part of the clinical workplace culture. The trained supervisor's individual learning herewith may have unintentionally resulted in organisational learning (Huber, 1991).

Regarding the content of feedback conversations, I would argue that CanMEDS roles are defined on a rather general level and need to be translated to practice in order to use them for giving specific feedback. The general approach for this is to define these broad roles into narrower 'core competencies' and even narrower 'enabling competencies', ultimately resulting in a complex matrix or roadmap with hundreds of observable milestones and outcomes (Frank & Danoff, 2007; Green et al., 2009). The problem herewith is that these matrices are too detailed; they do not guide feedback conversations but and become merely tick box exercises (Bindal et al., 2011). What we did in our feedback system, is define professional situations in which CanMEDS roles can be observed, assign the CanMEDS roles to authentic situations in which the roles are best observable, while leaving the interpretation to the expert judgement of the medical specialist (Chapter 2). The defined roles only served to facilitate feedback conversation and were meant as an invitation to expand attention beyond medical expertise. The system ensured attention to, but also beyond, medical expertise, including roles that had not been an explicit part of medical training for a long time. This is an important finding, given that many programmes still struggle to incorporate CanMEDS roles that are considered 'difficult', such as Collaborator or Leader, as they cannot be readily observed during patient encounters.

Nonetheless, another study in this thesis indicates that the structured feedback system and faculty training were not sufficient to really adopt the CanMEDS roles into residency training. A careful analysis

of the written feedback on CanMEDS roles residents received revealed that the way the roles are given meaning in practice is at variance with what was originally intended, and therefore not supportive of reaching the intended objectives (Chapter 4). The discourses of speed and efficiency dominated all CanMEDS roles, clearly a highly valued virtue in the organisational culture that is sometimes at odds with the CanMEDS framework. Moreover, in feedback, patients were positioned as objects in the periphery rather than participants at the centre, which does not align with CanMEDS' advocated patient-centred approaches that are associated with a higher quality of care (Mead & Bower, 2000; Bleakley, 2014).

These findings highlight an inherent shortcoming of competency-based education that was generally overlooked in the literature: The roles on paper may differ from how they are enacted in practice. Ideally, when trainees engage in feedback conversations, they attain knowledge about themselves and their progress, adopting the language of the competency framework against which they are being judged and come to understand and embody notions of quality for their discipline. The competencies, however, do not carry a univocal, agreed upon, meaning but go through a process of situated translation. They are socially negotiated, typically through consensus from analysis of shared practice. They do not exist in a vacuum but are socially constructed and enacted by people and artefacts in the clinical workplace. This process of situated translation is described by constructivist learning theorists (e.g. Ajjawi & Bearman, 2018; Fenwick, 2010; Wenger, 1998) but, to our best knowledge, we are the first to have empirically studied the phenomenon in a CanMEDS-informed workplace curriculum-in-action. Competency frameworks guide the *structuring* of assessment and feedback processes, but they do not guide how to ensure the roles are meaningfully *constructed* in this feedback and assessments. Consequently, it seems that CanMEDS roles are given meaning to suit practice as it is, rather than change practice as envisioned by CanMEDS' initiators. These findings inescapably challenge the feasibility of realising the CanMEDS 'dream' of better care and demanded us to explore what happens during postgraduate training outside of assessment situations.

Participation in the clinical workplace

Postgraduate training is situated in the clinical workplace and underpinned with the premise that residents learn through work. The clinical workplace provides the social, cultural and material context for residents' learning (Dornan et al., 2011). Residents' clinical workplace experiences foster their socialisation as members of the 'community of practice' of their specialisation (Wenger, 1998; Fuller, 2005). Billett's theory of workplace learning (Billett 2016; Billett, 2014; Billett, 2004), Communities of Practice theory (Wenger, 1998) and experience-based learning (Dornan et al., 2007) all describe how learners are increasingly granted access to practice, while support gradually decreases over time.

These theories consider learning and identity formation the outcome of the social process of participation and hold that the practice itself is most influential on what residents learn. In this light, what residents learn in terms of CanMEDS roles would be highly dependent on how they are enacted in clinical practice, as opposed to how they are described on paper. Theories of workplace learning provide insight into postgraduate medical education in general terms, however, they do not provide detail about how competency frameworks inform workplace learning on the ground. Moreover, while the link between CanMEDS and the formal curriculum, e.g. workplace-based assessment, is apparent, how the framework impacts the informal curriculum, e.g. participation, is largely understudied in the medical education literature.

The clinical workplace environment can be considered somewhat unruly, as intake of patients and the complexity of their illnesses cannot be planned, time pressure is high, and supervisor feedback occurs not spontaneously (Watling et al., 2013). As unruliness is hard to study, Billett's (2004) notion of the workplace curriculum is insightful when studying workplace learning. It highlights that other aspects of the clinical workplace are highly structured and, more importantly, also significant to residents' learning experiences. Structured aspects of the workplace curriculum are the goals and practices that determine the tasks and activities in which residents engage, what support they receive and how their efforts are appraised (Billett, 2001; Lave & Wenger, 1990). Residents' engagement in different kinds of patient care practices is central to the continuity of that practice, highlighting how interlaced the workplace curriculum and patient care practices are. Billett (2004) describes how learning is the result of interactions with human partners and nonhuman artefacts that workplaces afford. From this perspective, the clinical learning environment provides a particularly rich learning environment that affords residents with day-to-day interactions with patients, peers, nurses, medical specialists and others and allows them to work with a wide variety of clinical tools and systems.

Interactions with human partners

Our data confirm that the interactions residents had with their peers and supervisors helped them to define what they had learned from the clinical activities they participated in (e.g. Teunissen et al., 2007) and generally were in line with the attitudes and behaviours advocated by CanMEDS. More advanced aspects of especially the Leader and Health Advocate roles, however, seemed to be beyond residents', and even supervisors', reach (Chapter 5). We found that the names of the CanMEDS roles are not mentioned outside of formal assessment situations, meaning that the roles are not adopted in the day-to-day language. Even when a formal assessment situation forced supervisors to discuss CanMEDS roles, the way supervisors and residents construe the roles in their interactions is remarkably different from official documents (Chapter 4). It seems that the clinical discourse maintained old patterns of

thinking rather than adopting the new ideas CanMEDS proposes. The CanMEDS roles did not provide members of the community with a shared language in which to discuss resident performance. This is an important finding because one of the major possible benefits of explicating competencies is that it supposedly provides supervisors with a common language (Kogan, 2015). These findings indicate that the extent to which CanMEDS guides workplace interactions, and thus residents' workplace learning, may be limited.

Wiese et al. (2018) developed a realist theory of workplace learning specific to postgraduate medical education, based on empirical studies ($n=90$) in the field. They define three mechanisms through which residents learn, all within the domain of interaction with human partners: 1) supervised participation in practice, 2) mutual observation, and 3) dialogue during practice. Connecting our findings to their realist theory, the limited impact CanMEDS may have on learning through participation becomes even more eminent. The CanMEDS roles are intertwined and defined in a way that is quite detached from the daily clinical discourse (Whitehead et al., 2013), which probably makes them not particularly useful for supervision of participation in practice, and even less applicable to mutual observation (Chapter 5). Competency frameworks could potentially guide dialogue during practice by providing a language to discuss competence that used to be only implicit (Kogan, 2015), but we did not observe that potential being utilised in our setting (Chapter 5). The limited impact CanMEDS seem to have on practice-based learning supports the notion that in order to achieve change in the workplace curriculum, the workplace itself should actually subject to change (Bank et al., 2017).

Interactions with nonhuman artefacts

In line with Billett's (2004) notion of the workplace curriculum, our data shows that interactions with nonhuman artefacts were of major importance to residents' learning. These artefacts, such as checklists, systems and protocols, however, did not always align well with the CanMEDS framework. The organisational artefact that particularly stood out to impact residents' practice-based learning is the electronic patient record. Given that internal medicine residents spend as much as 5 hours per day on electronic patient record use (Chen et al, 2016), this is an important finding. Electronic patient records guided both residents' clinical reasoning and interactions with supervisors, nurses and patients. Some electronic patient record systems appeared to narrow the conversations strictly to medical expertise, whereas conversations guided by other systems incorporated a much more extensive range of roles (Chapter 5). Our findings highlight that aligning nonhuman artefacts, such as electronic patient records, with CanMEDS may either importantly contribute to its uptake or limit its impact on practice.

Meaning of findings in a nutshell

The studies in this thesis importantly showcase a tension that arises when competency frameworks are used to guide feedback in clinical workplace settings, as graphically depicted in Figure 1 below. Effective feedback calls for direct observation and should be provided after direct observation, but CanMEDS roles have a rather generic nature and are considered difficult to observe in practice.

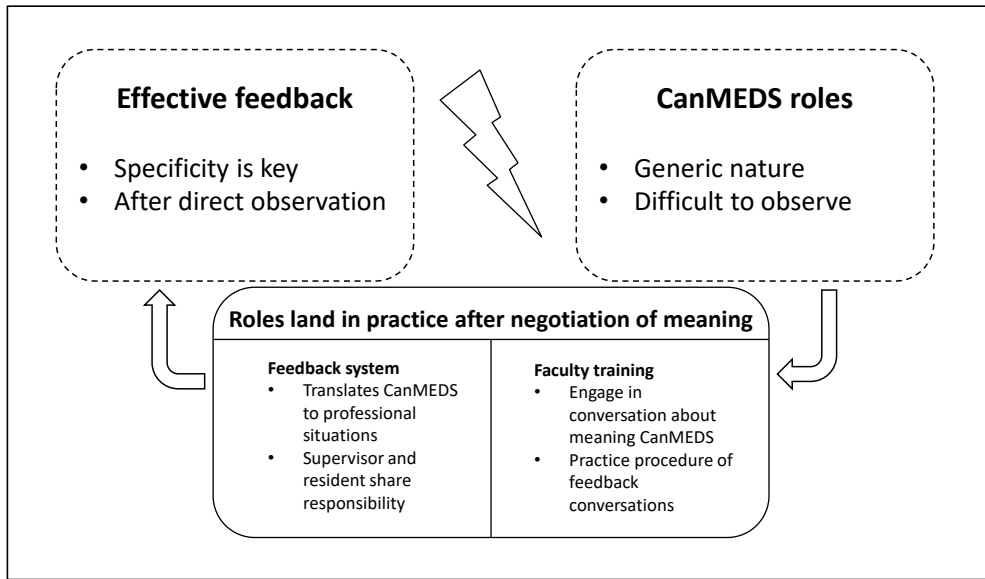


Figure 1. The tension between CanMEDS and feedback and role of negotiation of meaning

This tension can at least partially be overcome when the social process of negotiation of meaning is well-supported. Our thoroughly-designed feedback system and accompanying faculty training proved helpful but may not have been sufficient to overcome all barriers that arise when implementing competency-based postgraduate training. I will continue to discuss practical implications and areas for future research after setting out our methodological considerations.

Methodological considerations

The four empirical studies that give shape to this thesis each approached competency-based postgraduate medical training from different epistemological stances with a variety of both quantitative and qualitative methods. This variety does not only contribute to the rigour of this thesis, but it also reflects my learning trajectory as a PhD student. Departing from a post-positivist stance (Chapter 2 and 3), I developed an increased awareness of the affordances social interactions provide learners in workplace settings and adopted a constructivist stance in the following studies (Chapter 4 and 5). Through this ontological journey, I have learned the importance of alignment between ontology, epistemology, methodology, methods and interpretation of results. The strengths and

limitations of the individual studies are discussed in the respective papers. In this section, I would like to discuss the overarching considerations regarding relevance, design choices and transferability.

Relevance

This thesis is relevant because medical specialist education is going through a period of significant reform towards competency-based approaches. At the start of this PhD trajectory, very little empirical evidence of how these curricula operate in practice existed. This thesis used a structured line of clarifying research, which begins to unravel essential aspects, such as feedback and workplace interactions, of competency-based curricula in practice from a multitude of perspectives. The strength of this thesis lies in how it contributes to the ongoing discussion around competency-based medical education. The studies in this thesis bring to the surface how feedback processes can be improved, but also that the full promise of competency-based medical education may not readily be reached. The results of the studies in this thesis contribute to theories of workplace-based learning and can be used to improve residents' workplace-based learning experiences.

Design Choices

The methodological rigour of this thesis is reflected in the use of different methodologies and theoretical approaches in the various chapters, which permitted triangulation of the research findings. The first two studies used quantitative methods and approached the quantity and quality of feedback from supervisors to residents, while the last two studies approached workplace-based learning with qualitative methods. For Chapter 2, we designed and implemented a competency-based feedback system and quantitatively evaluated the frequency and quality of supervisory feedback within this system. In Chapter 3, we carried out a controlled longitudinal experiment to evaluate the effectiveness of a faculty training session on the quality of feedback, complementary to the feedback system. Chapter 4 qualitatively explores this feedback in-depth using discourse analytical tools to establish how the different CanMEDS roles are construed in written feedback. Chapter 5 was an ethnographic study using Communities of Practice theory to explore residents' learning from day-to-day interactions, focusing on how competency frameworks inform workplace-based training outside of assessment situations. Combining quantitative and qualitative studies, drawing on various theories, literature and approaches, importantly adds to the rigour and reliability of this thesis' outcomes.

Transferability

Despite the use of multiple methods, the generalizability of the empirical studies is compromised because we collected the data for the four studies in the same setting. All studies were carried out in Departments of Internal Medicine in the northern part of the Netherlands. Although I imagine many

of the mechanisms and phenomena we describe in this thesis are not specific to internal medicine, they can only be transferred with caution to other medical specialities or residency programmes outside of the Netherlands. The internal medicine wards and outpatient clinics can be characterised as relatively large in terms of the number of patients, residents and medical specialists, and given the broad nature of the discipline, physicians cooperate closely with other disciplines. The feedback culture is shaped by the fact that residents are supervised by multiple supervisors, and direct observation does not happen spontaneously. Our findings might not fully hold in specialities with different characteristics like surgery (where observation happens spontaneously in the operating theatre) or general practice (where supervisor and resident form stable dyads), but likely translate well to for instance cardiology or gynaecology. In order to enhance the transferability of the results of the qualitative studies, we have conceptualised our results on a relatively general level.

In total, relatively large numbers of supervisors ($n = 134$) and residents ($n = 163$) from seven different hospitals were included in these studies to increase reliability. The results of our qualitative studies may be sensitive to interpretation bias, due to the researchers' individual stances (See Chapter 4 and 5) in the ongoing debate on competency-based medical education. By leveraging the diversity in the research team of clinicians and non-clinicians, learning theorists and clinical teacher, we have attempted to minimise this potential source of bias. We held continuous discussions about the meaning of our results and purposefully considering alternative explanations for the mechanisms observed. The study presented in Chapter 3 concerns a controlled experimental setup, but unfortunately, it was not feasible to randomly assign supervisors to the training or control group, although we did not find any differences between the groups in the pre-measurements, this design potentially allows for selection bias. These potential sources of bias do not invalidate the results but should be taken into consideration when translating the findings to other settings. Although our synthesis is novel, our findings and data are consistent with previous research into clinical teaching and learning, which is spread across a large number of publications reviewed elsewhere.

Implications for practice and future research

Studies in this thesis revealed that with a structured feedback system and accompanying faculty training residents received high-quality feedback on the defined CanMEDS roles (Chapter 2 and 3). Some readers might still deploy a rather narrow definition of direct observation, which may hamper the uptake of competency frameworks as only few feedback opportunities are leveraged (Gauthier et al., 2018). So if you think direct observation typically entails planned encounters when a supervisor sits in and witnesses a resident during direct patient contact, for instance, while taking history or

performing a physical exam, please let me challenge that perspective. Direct observation can be viewed as something occurring much more frequently and ad hoc, for instance handovers, managing cases and interactions with other healthcare professionals. Basically, almost any professional situation that occurs during day-to-day collaboration of supervisors and residents, on the ward and in the outpatient clinic might be suitable for direct observation if framed more broadly. This broad approach also allows for better observation of CanMEDS roles like Scholar, Collaborator and Leader, that cannot really be observed during patient encounters. Future research could showcase if reframing direct observation more broadly indeed results in a less time consuming and more feasible approach to competency-based postgraduate training.

This thesis underlines the importance of a solid portfolio of workplace-based assessment instruments, that have the potential to aid the translation of the somewhat artificial roles on paper to daily clinical practice. Future practice and research should, and likely will, further unravel how feedback and assessment systems can optimally aid the translation from competencies on paper to daily clinical practice. An exciting development in this regard is the current uptake of Entrustable Professional Activities (EPAs), an essential task of a discipline that a resident can be trusted to perform without direct supervision (ten Cate, 2005). EPAs and CanMEDS roles complement each other, as EPAs are *units of work* whereas competencies are the *abilities of individuals* (ten Cate & Scheele, 2007). Assessment systems based solely on CanMEDS roles can provide a somewhat artificial lens through which to view resident performance. EPAs balance this limitation of competency frameworks by departing from physicians' actual work, which increases the likelihood of their adoption by clinical supervisors. At the same time, if poorly executed, there is a risk that EPAs result in an overly medical-technical view of the physician, ignoring many of the specific abilities defined by CanMEDS such as Health Advocacy. Future research should focus on how EPAs can be best implemented as a summative addition to the formative feedback system we designed and presented in this thesis.

Feedback systems should take the nature of roles carefully into account, as poor alignment between the roles on paper and in (assessment) practice will inevitably lead to a different operationalisation in practice from what was intended. Our studies only begin to acknowledge the different nature of the roles, by defining different professional situations in which they can be best observed. Future research could explore whether the different nature of the roles calls for a different kind of supervision, assessment and feedback entirely. Roles, for instance, that are enacted on the interpersonal level, such as Collaborator or Leader, may not be suitable for assessment and feedback on an individual level. This may explain why the interpersonal roles are often considered more challenging to assess and are less frequently addressed in feedback.

All chapters in this thesis reflect the importance of connecting frameworks to clinical practice. True curricular change in postgraduate medical training may inevitably mean that a change of organisational culture is needed. We observed that the CanMEDS framework itself had little impact on residents learning if it did not align well with the clinical reality. Therefore, in order to truly benefit from competency frameworks, they should be adopted in the day-to-day language of clinical workplaces, something that was not readily achieved. I imagine the implementation of CanMEDS should always be accompanied by clinical improvement initiatives that align well with the spirit of CanMEDS, like choosing wisely (Cassel & Guest, 2012), value-based healthcare (Porter, 2008) and clinical governance (Scully & Donaldson, 1998), in order to establish a genuine shift in practice. Future research should explore if purposive calibration between comprehensive clinical workplace practice and the to be implemented competency framework can better help to improve residents' learning meaningfully.

Conclusions

The adoption of competency frameworks in postgraduate training seems useful to direct assessment and feedback (Chapter 2 and 3) but may have limited impact on residents' actual learning and professional development at the clinical workplace (Chapter 4 and 5). From a social learning theory perspective, it may be considered a bit naïve to assume the medical profession will change through the education of a new generation of practitioners. Residents' learning predominantly takes place at the clinical workplace, where clinical practice and role models dictate what, how, and when residents learn. It seems likely that the implementation of CanMEDS itself has not instigated change in the medical profession as envisioned. Instead, the implementation of competency-based postgraduate training could be interpreted as a reflection of professional change that is already happening.

So why adopt competency-based frameworks in postgraduate training at all? Because competency frameworks may help to better respond to this changing organisation in a changing societal environment. Workplace-based learning increasingly affords fragmented, brief contact of residents with multiple supervisors, who must attempt to assess the residents' learning needs and professional abilities quickly (Bernabeo et al., 2011). Only systematic direct observation can help make this assessment, and aid progressively increased autonomy and trust throughout residency. Ideally, competency frameworks become part of a shared language to talk about residents' learning trajectories and performance. Competency frameworks are cut out for guiding these systematic direct observations and provide focus for feedback to roles that could otherwise be overlooked.

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Summary

Summary

As a response to the changing environment and a call for increased accountability to society, medical specialist education is adopting competency-based approaches. Competency-based medical education aims to better prepare physicians for their future work by defining the ultimate learning outcomes that inform undergraduate curricula and postgraduate clinical workplace learning. Although there is an extensive body of literature about how to best assess the defined competencies, little research has focused on how competency frameworks inform comprehensive clinical workplace learning. This thesis addresses this gap in the literature and provides novel insights in opportunities and drawbacks of competency-based approaches.

Chapter 1 sets the stage of this thesis. It begins with a quotation of a clinical supervisor that illustrates that for residents in order to become good physicians, they need to develop skills that go beyond the knowledge domain. This is exactly what competency frameworks intend to do; they make aspects of the medical profession explicit that were previously only treated implicitly. The most widely adopted competency framework is the CanMEDS framework. It comprises of seven roles: the central role of Medical Expertise and six surrounding 'intrinsic roles': Communicator, Collaborator, Leader, Professional, Health Advocate and Scholar. As a vital part of the transition towards competency-based education, practice and research up to date have strongly focused on the development of valid and reliable assessment instruments for these roles. Residents' learning is situated in the clinical workplace, where legitimate participation in real clinical activities is central to learner's development. Mere access to clinical activities is, however, not enough. Residents require deliberate support in order to optimise their experiential learning. Feedback is a vital element of that support and has been strongly endorsed by learners and educators alike as an indispensable element of effective clinical workplace learning. Although we know that all these separate elements are crucial for workplace learning, it remains unclear how clinical activities, support from supervisors and feedback, give shape to competency-based postgraduate training in practice. This thesis aims to provide insight into how postgraduate curricula, informed by CanMEDS, operate in practice.

Chapter 2 reports on how we designed and evaluated a feedback system to guide supervisors in adopting CanMEDS roles into their supervisory conversations with residents. The implementation of the CanMEDS framework challenges clinical supervisors to expand attention beyond medical expertise, including the six intrinsic roles. That had turned out to be difficult in practice. To facilitate this, we assigned the CanMEDS roles to a variety of professional situations in which they could be observed and evaluated. We found that all roles were covered in the written feedback. Apparently, the feedback

system offers enough structure to guide supervisors in incorporating the intrinsic roles in their feedback. Furthermore, we evaluated quality of supervisor's written feedback. Although quality of feedback overall was good, feedback on collaborator, manager and reflective professional often lacked improvement points and feedback on reflective professional was often not specific. We, therefore, recommend additional faculty training in order to provide supervisors with additional guidance on how to better address especially these roles that seem to lack behind. This study shows that it is possible to develop a feedback system in which feedback is provided on different CanMEDS roles. The system is generalizable to different authentic situations and roles. It may easily be expanded and be tailored to other workplace-based training settings.

Chapter 3 describes a longitudinal quasi-experimental controlled study with a pre-test/post-test design. We evaluated whether a short and simple, and therefore feasible, training session would help improve the quality of feedback residents receive from their clinical supervisors. Half of the internal medicine specialists in seven hospitals attended a 2,5-hour training session during which they practised giving feedback in a simulated setting using video fragments and role play. The control group did not receive any training. Residents rated the quality of supervisors' verbal feedback with a questionnaire and the research team analysed completeness of supervisors' written feedback. The data show a significant increase in the quality of feedback after the training, that persisted up to six months after the training. This is a promising outcome since it is a feasible approach to faculty development in the clinical workplace setting that is always pressed for time.

Chapter 4 presents a qualitative study in which we analysed what supervisors say in their feedback on CanMEDS roles, by applying critical discourse analytical tools to supervisors' written feedback. The results indicate that the way roles are constructed in the postgraduate curriculum-in-action was considerably different from how they are described on paper. The role of Collaborator was constructed in two different ways: a cooperative discourse of equality with other workers and patients; and a discourse, which gave residents positions of power—delegating, asserting and 'taking a firm stance'. Furthermore, efficiency -being fast and to the point- emerged as an important attribute of physicians. Patients were seldom part of the discourses and, when they were, they were constructed as objects of communication and collaboration rather than partners. This study's findings suggest that it takes more than a competency framework, evaluation instruments, and supervisor training to change clinical workplace learning. The findings showcase that a curriculum change in clinical workplace learning might actually require organisational change.

Chapter 5 continues with a constructivist grounded theory study employing ethnographic and interview techniques to gather authentic clinical workplace learning data. Given the fact that residents'

training relies heavily on learning through participation in the workplace under the supervision of a specialist, this study begins to unravel how CanMEDS informs practice-based learning and daily interactions between residents and supervisors. More explicitly, this study explores how the CanMEDS framework informs residents workplace-based learning outside of assessment situations. We used sensitising insights from Communities of Practice Theory. The study shows that CanMEDS roles occurred in an integrated fashion and usually remained implicit during interactions. The language of CanMEDS was not adopted in clinical practice, which seemed to impede explicit learning interactions. The CanMEDS framework did not really guide supervisors' and residents' practice or interactions. It was not explicitly used as a common language in which to talk about resident performance and roles. Therefore, the extent to which CanMEDS actually helps improve residents' learning trajectories and conversations between residents and supervisors about residents' progress remains questionable.

Chapter 6 provides a general discussion in which the main findings of the chapters are summarised, evaluated and placed in the light of other literature. The findings of the studies in this thesis indicate that although some efforts lead to promising results, an expanded focus, that not only focuses on medical expertise but encompasses all CanMEDS roles, may not readily be achieved. On the one hand, improved feedback on the defined competencies can be accomplished with carefully designed feedback systems and faculty training. On the other hand, the extent to which CanMEDS actually impacts workplace learning practice may be rather limited. These outcomes are important for practice, as they highlight both how competency-based approaches can be best leveraged as important pitfalls that remain to be addressed. Methodological considerations of this thesis regarding its relevance, design choices and transferability are discussed. All chapters in this thesis reflect the importance of connecting frameworks to clinical practice but also showcase that true curricular change in postgraduate medical training inevitably seems to mean organisational change is needed.

Samenvatting

Samenvatting

Veel medische vervolgoopleidingen hebben de afgelopen jaren een competentiegericht curriculum geïmplementeerd als reactie op maatschappelijke ontwikkelingen. Competentiegericht medisch onderwijs is bedoeld om artsen beter voor te bereiden op hun toekomstige werk, door een competentieprofiel te definiëren waaraan artsen aan het eind van hun opleiding moeten voldoen. Hoewel er veel literatuur is over hoe de gedefinieerde competenties het best kunnen worden beoordeeld, zijn er maar weinig studies gericht op de manier waarop competentieprofielen het leren op de klinische werkplek daadwerkelijk beïnvloeden. Dit proefschrift bouwt voort op bestaande literatuur en biedt nieuwe inzichten in mogelijkheden en valkuilen van competentiegericht werkplekleren.

Hoofdstuk 1 geeft een overzicht van de praktijksituatie en de bestaande literatuur. Het begint met een citaat van een klinische supervisor waaruit blijkt dat, om een goede dokter te worden, assistenten in opleiding tot specialist (aios) vaardigheden moeten ontwikkelen die verder gaan dan het kennisdomein. Dit is precies wat het gedachtegoed van competentiegericht opleiden beoogt; het expliciteren van aspecten van de medische professie die voorheen alleen impliciet werden benaderd. Het meest gebruikte competentie raamwerk is het CanMEDS framework. Het bestaat uit zeven rollen: de centrale rol van Medisch Expert en zes omringende 'intrinsieke rollen': Communicator, Samenwerker, Leider, Professional, Gezondheidsbevorderaar en Wetenschapper. Onderzoek en praktijk hebben zich tot nu toe veelal gericht op de ontwikkeling van valide en betrouwbare beoordelingsinstrumenten voor deze rollen en heeft zich minder gericht op het leerproces. Wat we weten over het leren van aios is dat het met name plaatsvindt op de klinische werkplek, waar zij een belangrijke rol vervullen in de dagelijkse patiëntenzorg. Echter, toegang tot patiëntenzorg is niet voldoende om het leren van aios in goede banen te leiden. Er is ook supervisie nodig van medisch specialisten. Dat feedback een onmisbaar onderdeel van deze supervisie vormt, wordt door zowel aios als specialisten onderkend. Hoewel we weten dat al deze afzonderlijke elementen cruciaal zijn voor werkplekleren, blijft het onduidelijk hoe klinische activiteiten, supervisie door medisch specialisten en feedback, vorm geven aan competentiegericht werkplekleren in de praktijk. Dit proefschrift heeft als doel inzicht te bieden in hoe CanMEDS-gerichte vervolgoopleidingen in de praktijk opereren.

Hoofdstuk 2 beschrijft een onderzoek waarin we een feedbacksysteem hebben opgezet dat supervisoren gebruiken bij het geven van feedback aan aios op CanMEDS rollen. De implementatie van het CanMEDS raamwerk daagt klinische supervisoren uit om de aandacht te verbreden van voornamelijk Medisch Expert naar de andere zes, intrinsieke, rollen. Dat blijkt in de praktijk nog niet

zo makkelijk te realiseren. Om dit te vergemakkelijken, hebben we de CanMEDS rollen toegekend aan verschillende professionele situaties waarin de rollen kunnen worden geobserveerd en geëvalueerd. Data van deze studie laten zien dat, met het feedback systeem, alle toegekende rollen worden behandeld in de schriftelijke feedback van supervisoren. Blijkbaar biedt het feedbacksysteem voldoende structuur om medisch specialisten te stimuleren om ook op de intrinsieke rollen feedback te geven. Daarnaast hebben we de kwaliteit geëvalueerd van schriftelijke feedback op CanMEDS rollen. Hoewel de kwaliteit van de feedback over het algemeen goed was, werd regelmatig geen feedback gegeven op de rollen Samenwerker, Leider en Professional. Bovendien was feedback op de rol Professional vaak niet specifiek. Op basis van deze resultaten doen we aanbevelingen om supervisoren aanvullend te trainen, zodat ze meer inzicht krijgen in met name de rollen die achter lijken te blijven. Deze studie toont aan dat het mogelijk is om een feedbacksysteem te ontwikkelen waarin feedback wordt gegeven op verschillende CanMEDS rollen. Het systeem is waarschijnlijk te generaliseren naar andere authentieke situaties en rollen, waardoor het in aangepaste vorm kan worden toegepast in andere vervolgopleidingen.

Hoofdstuk 3 rapporteert over een longitudinale quasi-experimentele gecontroleerde studie met een pretest-posttest ontwerp. We onderzochten of een korte training zou helpen om de kwaliteit van feedback van supervisoren aan aios te verbeteren. De helft van de internisten in zeven ziekenhuizen nam deel aan training van 2,5 uur. Tijdens de training werd aan de hand van rollenspellen geoefend met het geven van feedback in een gesimuleerde setting, met behulp van videofragmenten. De controlegroep ontving geen training of andere interventie. Aios beoordeelden de kwaliteit van de mondelinge feedback van supervisoren door middel van een vragenlijst; het onderzoeksteam beoordeelde de volledigheid van de schriftelijke feedback van supervisoren. Uit de analyses blijkt dat de kwaliteit van de feedback, tot zes maanden na de training, significant verbeterde. Dit is een veelbelovende uitkomst, omdat een korte training een haalbare manier is om bij te dragen aan de opleidingskwaliteit in de drukke klinische werkomgeving.

Hoofdstuk 4 richt zich op waar feedback op CanMEDS rollen nu eigenlijk over gaat. Hiervoor voerden we een kritische discourse analyse uit op de schriftelijke feedback van supervisoren aan aios. De resultaten laten zien dat de manier waarop rollen worden geconstrueerd in de praktijk aanzienlijk verschilt van de manier waarop ze op papier worden omschreven. Bijvoorbeeld, de discourse rondom Samenwerker bestond uit twee componenten: saamhorigheid met andere werknemers en patiënten zoals omschreven in CanMEDS, maar ook de machtspositie die zij geacht worden in te nemen in het zorgproces. Daarnaast kwam efficiëntie - snelen to-the-point- naar voren als een dominante discourse omtrent het werk van artsen. Patiënten maakten zelden deel uit van de discourse en als ze genoemd

worden, werden ze geconstrueerd als objecten van communicatie en samenwerking in plaats van als partners. De bevindingen van deze studie suggereren dat, om de beoogde veranderingen teweeg te brengen, er meer nodig is dan een competentieraamwerk, toetsinstrumenten en supervisor training. De bevindingen laten zien dat een verandering in het werkplekcurriculum wellicht een organisatieverandering vereist.

Hoofdstuk 5 omvat een studie naar dagelijks werkplekleren in de praktijk. Er wordt een grounded theory studie gerapporteerd waarin we etnografische en interviewtechnieken hebben toegepast. Aangezien het leren van aios sterk wordt gevormd door het meewerken in de patiëntenzorg onder supervisie van een medisch specialist, richt deze studie zich op hoe dagelijkse interacties tussen aios en supervisoren op de werkplek worden beïnvloed door CanMEDS. We kijken hierbij expliciet naar gewone, alledaagse, interacties buiten formele feedback en toetsingsmomenten. We gebruikten de Communities of Practice theorie om het leren van aios inzichtelijker te maken. De studie laat zien dat CanMEDS rollen geheel geïntegreerd aan bod komen tijdens het werkplekleren en tijdens interacties bijna altijd impliciet blijven. De taal van CanMEDS wordt niet overgenomen in de praktijk van klinische supervisie, wat expliciete gesprekken over leren in de weg lijkt te staan. Het CanMEDS-raamwerk lijkt geen leidraad te bieden voor aios of supervisoren om het werkplekleren vorm te geven. Het is dan ook de vraag in hoeverre CanMEDS helpt om het dagelijkse werkplekleren in de klinische praktijk daadwerkelijk te verbeteren.

Hoofdstuk 6 is een algemene discussie waarin de belangrijkste bevindingen van de hoofdstukken worden samengevat, geëvalueerd en geplaatst in het licht van bestaande literatuur. De resultaten van de studies in dit proefschrift laten zien dat hoewel sommige inspanningen tot veelbelovende resultaten leiden, het beoogde doel van daadwerkelijk breder kijken dan medisch handelen wellicht niet wordt bereikt. Het bleek het mogelijk om feedback op de gedefinieerde competenties te verbeteren, met behulp van een feedback systeem en training voor supervisoren. Tegelijkertijd was de manier waarop de rollen tot leven kwamen in de feedback anders dan beoogd en lijkt het CanMEDS framework weinig informatief te zijn voor het dagelijkse leren op de werkplek. Deze uitkomsten zijn belangrijk voor de praktijk, omdat ze zowel benadrukken hoe competentiegerichte benaderingen het best kunnen worden benut, als belangrijke valkuilen die nog moeten worden aangepakt. In dit hoofdstuk bespreek ik onze methodologische overwegingen, relevantie van de studies, de ontwerpkeuzes en in hoeverre de bevindingen van toepassing zijn in een andere context. Alle hoofdstukken in dit proefschrift weerspiegelen het belang van het verbinden van competentieprofielen met de klinische praktijk, en laten bovenal zien dat om een verandering in de vervolgopleiding te bewerkstelligen, wellicht een organisatieverandering nodig is.

Dankwoord

Dankwoord

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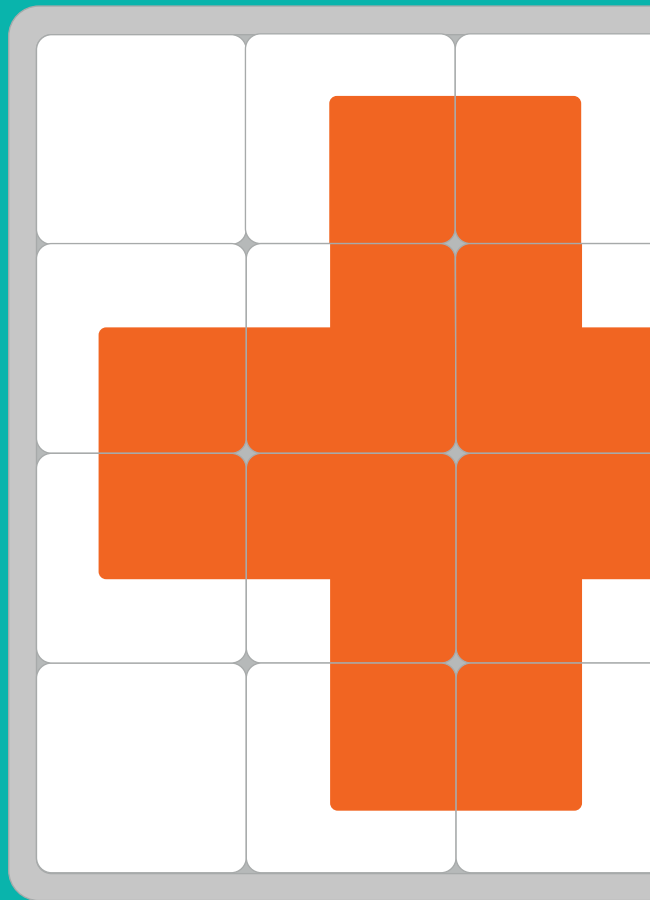
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CURRICULUM VITAE

Nienke Renting (1989) studied Educational Sciences at the University of Groningen, and, by the time she finished, she realised she was only ready to learn more about learning. A PhD position at the University Medical Center Groningen came her way. The research focused on competency-based postgraduate medical training, leading to the publication of this thesis and its journal articles. Nienke presented her research at various conferences and won a couple of awards, among which the AMEE Research Paper Award in 2015. While rounding off her PhD thesis, she worked at the Faculty of Economics and Business as an educational consultant and international accreditation officer. In 2018, Nienke wrote a single-authored commentary in Medical Education. Pursuing her journey of interdisciplinary research, she currently works as an Assistant Professor at the Faculty of Economics and Business, University of Groningen.



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