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### Feedback during clerkships: the role of culture

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**Chapter 4**  
**Meeting international standards: a cultural  
approach in implementing the mini-CEX  
effectively in Indonesian clerkships**

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## ABSTRACT

**Background:** Medical schools all over the world try to adapt their programmes to meet international standards. However, local culture might hamper innovation attempts.

**Aims:** To describe challenges in implementing the mini-CEX in Indonesia and investigate its effect on students' clinical competence.

**Methods:** The study was conducted in the Internal Medicine and Neurology departments of the Universitas Gadjah Mada, Indonesia. Implementing the mini-CEX into the existing curriculum, while taking the Indonesian culture into account, implied a shift from group to individual feedback. We compared students' final clinical competence before (Internal Medicine n=122, Neurology n=183) and after (n=183 and 186 respectively) the implementation of the mini-CEX, using a modified Objective Structured Long Examination Record (OSLER). The Mann Whitney-test was used to analyse the data.

**Results:** We took power distance and individualism into account to facilitate the implementation process. After implementing the mini-CEX, the OSLER results were significant higher in Internal Medicine ( $p < 0.05$ ). However, no differences were found in Neurology.

**Conclusion:** By managing the innovation process carefully and taking culture and local context into account, the mini-CEX can be implemented without changing the underlying concept. The shift from group to individual feedback, seems to have a positive effect on student learning.

## Introduction

Within the scope of globalization and internationalization, medical schools all over the world try to adapt their curriculum to meet international standards and, therefore, gain international recognition.<sup>1</sup> To help medical schools to improve their educational quality, the World Federation for Medical Education (WFME) has developed Global Standards for Quality Improvement for educational and assessment programmes.<sup>2-6</sup> The recommendations for assessment programmes include methods to ensure that students achieve the intended clinical competence in clerkships. Although the value of these standards is evident, the local context, needs and culture have to be taken into account while implementing standards.<sup>7-15</sup> However, in taking into account these factors, the underlying concept should be kept intact.<sup>16</sup>

In 2009, we started the implementation process of the Mini Clinical Evaluation Exercise (mini-CEX) in our Indonesian faculty to meet the WFME global standard of 2003 that reads “the number and nature of examinations should be adjusted by integrating assessment of various curricular elements to encourage integrated learning”. The mini-CEX is designed to identify strengths and weaknesses in individual students’ clinical performance based on direct observation in interaction with patients and on longitudinal assessment including many occasions and assessors. Based on this information, assessors can give students constructive individual feedback to promote further development and improve their clinical competence.<sup>17-20</sup> We implemented the mini-CEX adjusted to the Indonesian culture without changing the underlying concept. The first aim of this paper is to describe the implementation process in our Indonesian faculty and its effects on students’ clinical competence.

The Indonesian culture has been classified as high on power distance and low on individualism.<sup>21,22</sup> In educational practice, high power distance means that hierarchy plays a role in teacher-student relationship patterns. Due to this high power distance, students in clinical training do not receive most feedback from specialists, but from residents, as these are closer to students than specialists are. However, students perceive specialists’ feedback as more instructive.<sup>15</sup> A consequence of low individualism is that clinical supervision is often given to groups of students instead of to individual students.<sup>12</sup> Using the mini-CEX,

however, implies that individual students need direct contact with their clinical teachers to obtain feedback.<sup>18-20</sup> Thus, the implementation of the mini-CEX requires a shift in the usual Indonesian pattern of teacher-student interaction: the specialist should provide more often feedback to individual students instead of groups. We aimed to present the strategic choices that we made to implement the mini-CEX as effectively as possible in our Indonesian culture.

A second aim of our study was to investigate whether the implementation of the mini-CEX in the Indonesian culture had an effect on students' clinical competence at the end of their clerkships. Although the mini-CEX has the potential to facilitate students' learning effectively during clerkships,<sup>20,23,24</sup> only a few studies demonstrated improved clinical competence due to its implementation in an educational programme.<sup>25</sup> Indonesian students indicated before, that they appreciated feedback from medical specialists as more instructive than feedback from residents, which can be explained by large power distance.<sup>15</sup> Therefore, we implemented the mini-CEX in such a way that only specialists were allowed to administer the mini-CEX to students. We expected that this procedure, together with the shift to individual feedback, has a positive effect on students' clinical competence at the end of their clerkships.

In our study, we implemented the mini-CEX into the existing clerkship programme in two departments: Internal Medicine and Neurology. To examine the effects of the implementation, we compared the clinical competence levels of students who followed the curriculum before the implementation of the mini-CEX (baseline measure) with those of students who followed the curriculum after its implementation.

## **Method**

### ***Context***

This study was conducted at the Faculty of Medicine, Universitas Gadjah Mada, Indonesia. The clinical phase consists of two years of clerkships in a department-based system. The clerkships take place in two main teaching hospitals and several affiliated hospitals. Four clerkships last 8-10 weeks (Internal Medicine, Surgery, Obstetrics-Gynaecology, Paediatrics), and the other clerkships last 2-4 weeks (Neurology, Psychiatry, Dermatology, Ophthalmology, Otorhinolaryngology,

Anaesthesiology, Radiology and Forensic Medicine). The current study was performed in the Internal Medicine and Neurology Departments.

### **The** existing assessment programme in clerkships

Students' *clinical knowledge* during clerkships is assessed using clinical tutorials and case reflections. Clinical tutorials are case-based discussions in which students present a patient case from the ward or ambulatory care setting. Case reflections are students' reflections on a perceived interesting case. In the 10-week clerkship in Internal Medicine, knowledge is assessed using 10 clinical tutorials and 10 case reflections. In the 4-week clerkship in Neurology, student knowledge is assessed using 4 clinical tutorials and 4 case reflections. To assess *clinical skills*, students have to demonstrate their abilities by reporting their achievements on a list of clinical skills in their logbooks, which have to be approved by their supervisors afterwards. In Internal Medicine, 40 clinical skills are required to complete the logbook and in Neurology 20. The assessment of *professional behaviour* in both departments is based on weekly supervisor feedback. All assessments are included in the students' individual logbooks. In the final week of both clerkships, students' final clinical competence is assessed using a modified Objective Structured Long Examination Record (OSLER). In this assessment method, each student is observed when he/she performs history taking and the physical examination, explains the possible diagnosis and the management plan, and educates/counsels a patient. Thereafter, he/she makes a patient report and finally answers questions of the examiner.

### **Implementation process of the mini-CEX**

Implementation of the mini-CEX into the existing assessment programmes of the clerkships, asked for a shift in feedback provider (from resident to specialist) and feedback receiver (from group to individual). To manage these changes, we followed Gale & Grant's (1997) steps for managing innovations in medical education: establish the needs and benefits, find the power to act, design the innovation, consult, publicize the change widely, agree on the detailed plan, implement, provide support, modify plans and evaluate outcomes.<sup>26</sup> During the implementation process, we took the characteristics of our country – which is classified as high on power distance and low on individualism – into account. This implied that during innovation (1) higher level hierarchy people had to be

involved in decision making and (2) decisions had to be made collectively by all stakeholders.<sup>22</sup>

All stakeholder groups – representatives of experts, policy makers, managers and top leaders in our medical school – were involved in the implementation process of the mini-CEX since expertise, key people, and authority are vital for obtaining the power to act in managing an innovation process.<sup>26</sup> The needs and benefits were discussed with the Department of Medical Education, the Clinical Rotation Team (Clerkships Committee), the vice dean for academic affair and the Education Coordinator of both Internal Medicine and Neurology Departments. The meetings resulted in a broad support by all stakeholders. We consulted the Clinical Rotation Team (Clerkships Committee), the Education Coordinator of both departments and the Assessment Committee and discussed the new assessment *blueprint*, the design of the mini-CEX assessment *form* and the *strategic choices* of implementation until consensus was reached.

We used Miller’s pyramid of competence as our framework in developing the new assessment *blueprint* for our clerkships (Figure 1).<sup>27-29</sup> In the existing assessment programme, only professional behaviour was assessed on the “does” level, using formative feedback from the supervisor. Consequently, feedback on clinical competence was lacking. The implementation of the mini-CEX fills this gap in the existing assessment programme. To create space for the implementation of the mini-CEX and to keep the assessment programme lean and feasible (see also Driessen et al. 2012),<sup>30</sup> we decided to slightly decrease the number of case reflections from 10 to 6 times in the Internal Medicine Department, and from 4 to 2 times in the Neurology Department.

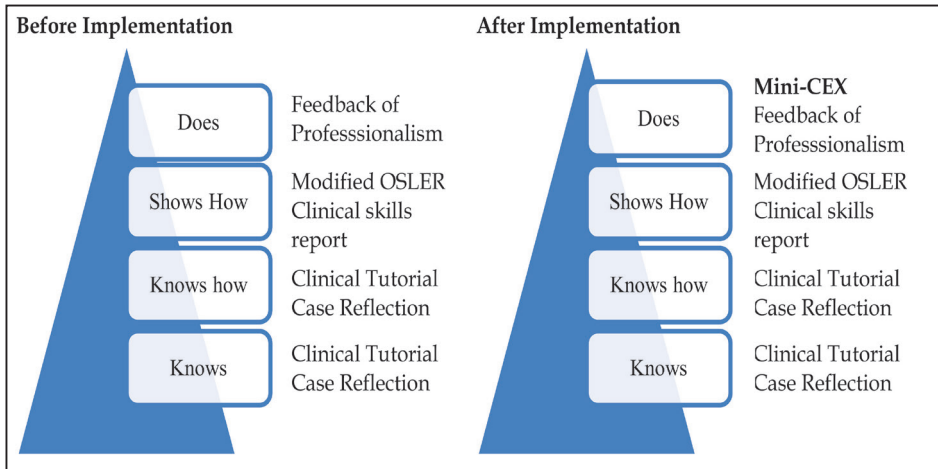


Figure 1. Assessment program during clerkships before and after the implementation of mini CEX

All stakeholders agreed on the mini-CEX forms that were adjusted to our assessment policy. Agreement about the form is needed to encourage the stakeholders' participation in the implementation of the mini-CEX.<sup>20</sup> Eight clinical competencies were defined for assessment (history taking, physical examination, diagnosis, patient management, communication/patient counselling, professionalism, organization/efficiency, and overall clinical care) and 4 scales for scoring (1 = under expectation, 2 = meet expectation, 3 = above expectation, and 4 = outstanding). All assessment forms are incorporated in mini-CEX books, which the students have to bring along during their clerkships in both departments. All procedures were incorporated in the students' mini-CEX book as written guidelines for both examiners and students.<sup>18</sup>

### Strategic choices pertaining to the examiner

1. For learning during clerkships, high power distance implies that specialists are perceived as experts in the field, that students tend to depend on their teacher's input and that the teacher is expected to outline paths that have to be followed by the students.<sup>21,22</sup> In addition, Indonesian students were found to perceive feedback from specialists as more instructive than feedback from other health professionals.<sup>15</sup> Therefore, we decided that *the examiner has to be a specialist*.



2. In the mini-CEX, we wanted students to be assessed individually by specialists. Since the implementation process required more specialists than there were available in the main teaching hospital, we had to recruit additional examiners. Therefore, we decided that *the examiner has to be a specialist at the main teaching hospital or at one of the affiliated hospitals.*
3. Since the majority of the specialists are not university staff, but hospital staff, for whom teaching is not their core business and whose burden is increased by administering the mini-CEX, we wanted to reward them for their participation and involvement to strengthen commitment to perform the task conscientiously. Paying for examining may be a possibility to address the lack of incentives and *reward* for teaching in the clinical setting.<sup>31,32</sup> Therefore, we decided to *pay the examiners for their participation.*
4. Since the examiner is acquainted with the experience and performance levels of his or her students, the examiner is able to judge whether students work within their competence and to avoid unsafe situations for patients that may occur if inexperienced students examine them.<sup>33</sup> Therefore, we decided that *the examiner has to select the patients for the mini-CEX.*
5. Direct observation is needed in order to make concrete suggestions for improving students' clinical performance.<sup>34-39</sup> It is suggested that, if tasks are complex, providing feedback shortly after direct observation may be most effective, because it may prevent error from being encoded into memory.<sup>35,36,40</sup> Oral feedback offers the opportunity to clarify the learning points. The advantage of written feedback is that it can be reread, which will remind the students about the content of the feedback and may be considered more seriously.<sup>40-42</sup> Therefore, we decided that *immediately after direct observation, the examiner has to provide feedback on the student's performance both orally and written on the mini-CEX form.*
6. Information about students' strengths and weaknesses is important to guide their future learning, foster their self-reflection and self-remediation, and promote advanced training.<sup>43</sup> To optimize the effectiveness of this information and correct performance deficiencies, the examiner should discuss with the student how his/her performance relates to the standard or desired performance.<sup>34,36,37</sup> Therefore, we decided that *the examiner has to*

*provide feedback that includes information about students' strengths and weaknesses, and corrects performance deficiencies.*

7. Feedback literature suggests that teachers should discuss action plans for performance improvement with students, because it will guide them how to apply the feedback in practice to change their performance.<sup>35,37,40</sup> Teachers and students should work together as allies.<sup>34,36</sup> However, in a country with large power distance, education is centred around the teacher. For instance, the teacher is expected to outline the paths the student has to follow.<sup>21,22</sup> The power distance that exists between teachers and students may impede the discussion between both of them. To facilitate the discussion about the action plan for performance improvement, we decided that *the examiner and the student have to discuss and draw up action plans for performance improvement together.*
8. Using the mini-CEX books offers the opportunity to get insight in students' progress over time, coverage of the curriculum content and patient problems that are related to student performance on the mini-CEX.<sup>18</sup> Therefore, *the examiner has to record the assessment on the form in the mini-CEX book.*

### ***Strategic choices pertaining to the student (examinee)***

1. Literature suggests that feedback is considered effective and useful when students need feedback, play an active part in the feedback process, get the opportunity to receive it in time and are able to use it.<sup>40,41</sup> However, Indonesia is a country low on individualism in which feedback is commonly given to groups. This cultural characteristic creates a threshold for students to speak up and discuss their performance with specialists: if they make a mistake in front of other students they may lose face.<sup>21,22</sup> Besides, in countries with large power distance, teachers initiate all communication, including providing feedback.<sup>15,21,22</sup> Requiring students to ask the specialist for feedback individually and making it the assessment policy that is known by both of them, may encourage students to be more active and encourage specialists to create space for students to take the initiative. In addition, if feedback is given individually, students' threshold to speak up may decrease. Therefore, we required that *students have to ask the specialist, authorized as the examiner, for feedback provided directly after observation, and discuss action plans to improve their performance.*

2. For feasibility and effectiveness reasons, the number of mini-CEXs should be limited.<sup>44</sup> This way, students have ample time to improve their performance and teachers get the opportunity to adjust the teaching process to students' needs based on the mini-CEX information.<sup>35,36</sup> We decided that *students have to perform the mini-CEX at least 4 times in Internal Medicine and at least 2 times in Neurology, and that only one mini-CEX is allowed per week.*
3. To influence student learning, assessment should have consequences,<sup>45</sup> for example by using the mini-CEX as a summative assessment tool. Next to summative assessment, formative assessment should be provided, as it enables students to learn from the feedback provided by the examiner.<sup>29,45-47</sup> Therefore, we decided that *scores on the mini-CEX are part of the final clerkship grade (15% of total score).* The summative mini-CEX score is determined on the basis of the two best performances on the mini-CEX. Students are allowed to fail a mini-CEX assessment, as long as they meet the expectations of the last two mini-CEXs.
4. By using the mini-CEX book, the students are expected to be aware of their progress. Students should keep record of their achievements to be used in discussions of further training.<sup>33</sup> Therefore, we decided *that students have to keep record of the assessment process in the mini-CEX book and bring the book along in case the supervisor asks for assessments.*

To publish and prepare the implementation of the mini-CEX, we arranged training sessions for the specialists in both departments. Participants were introduced and trained in the basic concepts of the mini-CEX (criteria and assessment procedure), providing constructive feedback and making plans of action after providing feedback. The training included the use of a video and simulations.

## **Effect study**

### ***Participants and procedure***

The participants in our study were the last group of students before (baseline group) and the first group of students after the implementation of the mini-CEX (mini-CEX group). The baseline group consisted of 183 students from Internal Medicine (41% male and 59% female) and 186 students from Neurology (42%

male and 58% female). The mini-CEX group consisted of 122 students from Internal Medicine (45% male and 55% female) and 183 students from Neurology (48% male and 52% female). The examiners involved in the implementation of the mini-CEX were 66 internists (64% male and 36% female) and 22 neurologists (59% male and 41 % female).

To examine the effect of the implementation of the mini-CEX on students' clinical performance, we used their scores on the OSLER examination. For the baseline as well as the mini-CEX group, the OSLER was taken during the final clerkship week to assess students' final clinical competence levels. The examiners of the OSLER were specialists from the main teaching hospitals. Ethical approval for using the administrative data was received from the Ethical Committee of Research in Medical Health.

### ***Instrument (OSLER)***

The original OSLER form contains 10 items: 4 on history taking, 3 on physical examination; and 3 on investigation, management and clinical acumen.<sup>48</sup> The initial assessment is criterion referenced through a P+ (very good/excellent, 60-80), P (pass/borderline pass, 50-55), and P- (below pass, 35-45) which is followed by the selection of an appropriate mark from a list of possible marks, with each mark being illustrated by a written descriptive profile (e.g. "50 = Adequate presentation of the case and communication ability. Nothing to suggest more than just reaching an acceptable standard in physical examination and identification of the patient's problems and their management. Clinical acumen just reaching an acceptable standard. Safe borderline candidate who just reaches a pass standard"). We used a modified version of the OSLER which was developed in collaboration with the specialists in the Internal Medicine and Neurology departments. This modified version was used for both the baseline and the mini-CEX group. In Internal Medicine, students were assessed on 9 clinical competencies: 1) doctor-patient relationship; 2) history taking; 3) physical examination; 4) classify data, synthesize, determine & review patient problem; 5) propose and explain the possible results of investigations; 6) arrange and explain management plan; 7) educating/counselling; 8) secondary prevention; and, 9) overall performance. The rating scales ranged from 1-100 (1 = very poor, 100 = outstanding). In the Neurology Department, 4 groups of

clinical skills were scored: 1) history taking (9 items); 2) physical examination (7 items); 3) Clinical Judgment (2 items); and, 4) patient management, including professional behaviour (10 items). The rating scales ranged from 1-3 (1 = poor, 3 = outstanding). The total score can, therefore, range from 28 up to 84.

### ***Statistical analysis***

To examine whether the implementation of the mini-CEX in the clerkships improved students' final clinical competence, we performed a Mann-Whitney U test in which the dependent variable was the score on the modified OSLER. Since pre-clerkship Grade Point Average (GPA) was found to be the most important predictor of student performance,<sup>49</sup> we examined the similarity between the baseline and the mini-CEX group by comparing students' pre-clerkship GPA scores. We used the Mann-Whitney U test, since the distribution of the data was not normal.

### **Results**

Students' performance on the mini-CEX in both Internal Medicine and Neurology was on average higher after the first mini-CEX (Table 1). Kendall's W tests and Wilcoxon's tests, respectively, showed that in departments, the improvement over time was significant for each of the clinical competencies (Internal Medicine  $p < .001$  for each clinical competency, Neurology  $p < .01$  for 4 or 5 clinical competencies, and  $p < .001$  for the other competencies).

*Table 1. Students' performance on the mini-CEX (means and standard deviations)*

Clinical competencies	Internal Medicine (n =122)								Neurology (n =183)			
	Mini-CEX 1 (1-4)		Mini-CEX 2 (1-4)		Mini-CEX 3 (1-4)		Mini-CEX 4 (1-4)		Mini-CEX 1 (1-4)		Mini-CEX 2 (1-4)	
	Mean	SD <sup>a</sup>	Mean	SD <sup>a</sup>	Mean	SD <sup>a</sup>	Mean	SD <sup>a</sup>	Mean	SD <sup>a</sup>	Mean	SD <sup>a</sup>
Anamnesis	1.88	.69	2.53	.56	2.54	.55	2.77	.54	2.98	.90	3.21	.74
Physical Examination	1.80	.64	2.51	.50	2.51	.53	2.63	.60	2.87	.81	3.17	.66
Diagnosis	1.79	.69	2.57	.53	2.52	.53	2.62	.57	2.96	.89	3.23	.76
Patient Management	1.79	.66	2.52	.53	2.57	.56	2.64	.56	2.89	.86	3.14	.71
Communication and Consultation	2.07	.68	2.58	.50	2.56	.58	2.73	.60	2.95	.86	3.31	.70
Professionalism	1.97	.64	2.54	.59	2.54	.53	2.76	.58	3.03	.87	3.28	.72
Organization/Efficiency	1.75	.66	2.52	.55	2.52	.55	2.66	.58	2.87	.81	3.14	.67
Overall clinical care	1.84	.66	2.55	.52	2.54	.55	2.70	.57	2.95	.88	3.20	.72

a. Standard Deviation

In both departments, the pre-clerkship GPA scores of students before and after implementation were similar ( $Z=-.45$ ,  $p > 0.05$ , see Table 2). In Internal Medicine, the OSLER results of the students who entered the clerkships after the implementation of the mini-CEX were significantly higher than those of students who entered the clerkships before the implementation of the mini-CEX (Mann-Whitney U test,  $Z=-2.34$ ,  $p<.05$ , Table 2). No significant differences were found in the Department of Neurology (Mann-Whitney U test,  $Z=-.57$ ,  $p>.05$ ).

Table 2. The comparison of students' pre-clerkship GPA and OSLER

Department	Pre-clerkship GPA				Mann-Whitney test	Modified OSLER results				
	Before implementing the mini-CEX (1-4)		After implementing the mini-CEX (1-4)			Before implementing the mini-CEX (1-100)		After implementing the mini-CEX (1-100)		Mann-Whitney test
	N	Median (IR <sup>a</sup> )	N	Median (IR <sup>a</sup> )		N	Median (IR <sup>a</sup> )	N	Median (IR <sup>a</sup> )	
Internal Medicine	183	3.48 (3.23-3.72)	122	3.50 (3.17-3.72)	Z=-.45, p=0.66	183	85.78 (80.30-89.10)	122	86.37 (81.08-90.85)	Z=-2.34, p=0.019
Neurology	186	3.50 (3.25-3.70)	183	3.51 (3.21-3.72)	Z=-.56, p=0.58	186	77.28 (73.92-79.91)	183	77.28 (75.60-79.80)	Z=-.57, p=0.57

a. Interquartile Range

## Discussion

To meet global standards for medical education, we implemented the mini-CEX in the clerkships taking into account the recommendations of the WFME (2003).<sup>4</sup> We applied a careful procedure and considered culture and local context in implementing the mini-CEX into the existing programme. Despite tensions between the preconditions for applying the mini-CEX and the characteristics of the Indonesian culture, we made a series of decisions to reduce these tensions, while keeping the underlying concept of the mini-CEX intact. At the end of the Internal Medicine clerkship, the clinical competence scores of students who took the mini-CEX were significantly higher than those of students who completed the clerkships before the implementation of the mini-CEX. In Neurology, we did not find such differences.

To facilitate the *implementation process*, we took the cultural characteristics of our country into account. First, power distance facilitated obtaining support for the innovation: the fact that the top of our organization desired to meet international standards was instrumental in obtaining the power to act and encouraging specialists to participate as examiners. This effect was strengthened by the fact that in the Indonesian culture subordinates (in this case teachers)

expect to be told what to do because decisions are made at the top.<sup>22,50</sup> Second, we took collectivistic characteristics of the Indonesian culture into account: together with policy makers and managers, we made collective decisions on the practical aspects of the implementation that may help examiners in performing the mini-CEX, for example written guidelines in the mini-CEX book and examiner training prior to the implementation.<sup>18-20,44,51,52</sup> Involvement and collective decisions from all stakeholder groups are important in collectivist countries.<sup>22</sup>

To retain the *underlying concept* of the mini-CEX, we took both these two cultural characteristics – power distance and individualism – and our local context into account. Power distance was taken into account by recruiting specialists to administer the mini-CEX. Since students were found to attach more value to the feedback from specialists higher in the hierarchy, we intended to optimize their learning processes as much as possible by making use of this cultural aspect. The collectivistic aspect of the Indonesian culture was taken into account by having specialists provide feedback individually. By taking students out of the group setting, they did not need to fear that they would lose face because of making a mistake in front of other students.<sup>15,21,22</sup> Finally, to attune the implementation of the mini-CEX to our local context, we kept the assessment programme lean and feasible by reducing the number of case reflections and incorporating the mini-CEX into the existing assessment programme in both Internal Medicine and Neurology Departments.<sup>30</sup>

The implementation of the mini-CEX has facilitated the provision of individual constructive feedback based on direct observation. These results are in line with the revised version of the WFME recommendations in 2012 that all medical schools should “ensure timely, specific, constructive and fair feedback to students on the basis of assessment results”.<sup>5</sup> The fact that our new situation matches the new recommendations, supports our implementation process as well-thought-out.

Our study showed that in Internal Medicine, the final clinical competence of students who followed the clerkship after the implementation of the mini-CEX was significantly better than that of the baseline group. In addition, the mini-CEX results showed a significant improvement between the first and subsequent assessments. As no other curricular elements had been changed,



the implementation of the mini-CEX may have improved students' clinical competence by driving their learning.<sup>20,23,24,53</sup> The positive effects may be attributable to the shift in the pattern of teacher-student interaction from group to one-to-one teaching, which was highly valued by the students.<sup>19</sup> In the mini-CEX, each student was individually observed and supported to participate as an actor in performance instead of only being a passive observer, which was needed for the development of competences.<sup>54</sup> By receiving individual feedback during the mini-CEX, students got insight into their strengths and weaknesses, which is important to guide them to future learning, foster them to do self-reflection and self-remediation, and promote them to advanced training.<sup>20,28,29,39,40,43,46,55-61</sup> In high power distance countries, individual feedback from specialists may be even more effective, because students perceive specialists as experts in the field whose feedback should be applied to practice.<sup>21,22,62</sup> As a result of the feedback, students may have put more effort in practicing and giving attention to the clinical competencies, because they realized that they would be directly observed and assessed individually during interactions with patients.<sup>19</sup>

Although we did not find significant improvements in students' final clinical competence in Neurology, the students appear to receive higher scores on the second mini-CEX on all the competencies as compared to their scores on the first mini-CEX. That we did not find significant improvements may be caused by a "ceiling effect". The neurology examiners tended to give high scores on the OSLER before the implementation of the mini-CEX, so there was not much space left to improve scores after the implementation of the mini-CEX. Another explanation for not finding a significant difference may be that there was too little time for improvement to find a significant effect considering the 4-week duration of the Neurology clerkships. To improve students' clinical competence, they need time for learning, practicing, elaboration and reflection.<sup>43,54,63</sup> Future research might investigate how much time is needed by students to demonstrate the effect of implementation to their final clinical competence.

Our study was limited to only one medical school in Indonesia. Indonesia is a very large country with cultural differences between different parts of the country. We know from literature that cultural climates can differ between regions within a country.<sup>64</sup> In general, however, cultural differences between countries are larger

than those between subcultures within countries.<sup>15,65</sup> Therefore, our findings may be generalizable to other medical schools in Indonesia. Nevertheless, replication studies are needed to strengthen the current outcomes.

Another limitation of this study is that we used a single modified OSLER to evaluate the effect of implementing the mini-CEX on students' final clinical competence. Although one single OSLER might not produce reliable outcomes for individual students, on group level, the outcomes can be considered reliable. To make reliable decisions about individual students, multiple assessment moments and methods are recommended.<sup>16,28,29,43,51,55,59,66-68</sup> Therefore, in our assessment programme, decisions about students are based on multiple assessment moments: the modified OSLER is only a part of the summative assessment programme, with other assessment methods including clinical tutorials, case reflections and students' reports on their achievements on a list of clinical skills in their logbooks.

A third limitation is that, because of practical and feasibility reasons, the effect study included only Internal Medicine and Neurology. Considering the differences in students' final clinical competence in both departments, further research is necessary to explore student learning in preparing the mini-CEX and internalizing feedback.

The main reason for the decision to implement the mini-CEX was meeting the WFME global standards for quality in medical education. To accomplish the implementation process effectively, we followed Gale & Grant's (1997) steps for change management in education.<sup>26</sup> We observed that meeting global standards goes along with cultural tensions. This raises the question whether global standards are as global as they pretend to be. In our study, we were able to overcome cultural frictions by using local characteristics to engineer the management of change. Our positive results even facilitated the acceptance of the mini-CEX, which was an unexpected success, as the mini-CEX is an educational concept that does not directly fit in the Indonesian culture. The practical implication of our study is, therefore, that culture is not necessarily an obstacle when implementing educational concepts stemming from countries with a different culture. The lessons that can be learned from this individual case is that successful implementation of concepts developed in another culture

requires taking into account the characteristics of the local culture. Our study – in which we decreased possible tensions between the old and the new situation by using our knowledge about cultural differences together with the systematic steps in the implementation process – could be taken as an example.

In conclusion, in our Indonesian faculty, the implementation of the mini-CEX required a shift from feedback from residents to feedback from specialists and from group feedback to individual feedback. By carefully taking into account culture, local context and demands and using systematic steps, the mini-CEX could be implemented as intended. We did find a positive effect of implementing the mini-CEX on students' final clinical competence at Internal Medicine. We call on other medical schools, who wish to meet international standards, to report their experiences with implementing educational and assessment concepts that do not directly match their cultural features. Additional knowledge about all the challenges which have to be faced, might shed more light on the value and applicability of international standards.

## References

1. Harden RM. International medical education and future directions: A global perspective. *Acad Med* 2006;81(12 Suppl): S22–S29.
2. Lilley PM, Harden RM. Standards and medical education. *Med Teach* 2003;25:349–351.
3. Van Niekerk JP de V, Christensen L, Karle H, Lindgren S, Nystrup J. WFME Global Standards in Medical Education: Status and perspectives following the 2003 WFME World Conference. *Med Educ* 2003;37:1050–1054.
4. World Federation of Medical Education (WFME). Basic Medical Education: WFME Global Standards for Quality Improvement. Copenhagen: University of Copenhagen, WFME Office 2003.
5. World Federation of Medical Education (WFME). Basic Medical Education. WFME Global Standards for Quality Improvement. New Edition [Internet]. 2012. Available from: <http://wfme.org/standards/bme/78-new-version-2012-qualityimprovement-in-basic-medical-education-english/file>. Accessed 15 May 2013.
6. Hays R, Baravilala W. Applying global standards across national boundaries: Lessons learned from an Asia-Pacific example. *Med Educ* 2004;38:582–584.
7. Das Carlo M, Swadi H, Mpofu D. Medical student perceptions of factors affecting productivity of problem based learning tutorial groups: Does culture influence the outcome? *Teach Learn Med* 2003;15(1):59–64.
8. Bleakley A, Brice J, Bligh J. Thinking the post-colonial in medical education. *Med Educ* 2008;42:266–270.
9. Gwee MC. Globalization of problem-based learning (PBL): Cross-cultural implications. *Kaohsiung J Med Sci* 2008;24(3 Suppl): S14–S22.
10. Lam TP, Lam YY. Medical education reform: The Asian experience. *Acad Med* 2009;84:1313–1317.
11. Jippes M, Majoor GD. Influence of national culture on the adoption of integrated and problem-based curricula in Europe. *Med Educ* 2008;42:279–285.
12. Wong AK. Culture in medical education: Comparing a Thai and a Canadian residency programme. *Med Educ* 2011;45:1209–1219.
13. Chandratilake M, McAleer S, Gibson J. Cultural similarities and differences in medical professionalism: A multi-region study. *Med Educ* 2012;46: 257–266.

14. Frambach JM, Driessen EW, Chan LC, van der Vleuten CPM. Rethinking the globalization of problem-based learning: How culture challenges self-directed learning. *Med Educ* 2012;46: 738–747.
15. Suhoyo Y, van Hell EA, Prihatiningsih TS, Kuks JBM, Cohen-Schotanus J. Exploring cultural differences in feedback processes and perceived instructiveness during clerkships: Replicating a Dutch study in Indonesia. Accepted for publication in *Med Teach* 2014;36:223-229.
16. Schuwirth LWT, van der Vleuten CPM. Changing education, changing assessment, changing research. *Med Educ* 2004;38:805–812.
17. Kogan JR, Bellini LM, Shea JA. Feasibility, reliability and validity of the Mini Clinical Evaluation Exercise (mini-CEX) in a medicine core clerkship. *Acad Med* 2003;78:33–35.
18. Norcini JJ. The Mini Clinical Evaluation Exercise (mini-CEX). *Clin Teach* 2005;2:25–30.
19. Hill F, Kendall K. Adopting and adapting the mini-CEX as an undergraduate assessment and learning tool. *Clin Teach* 2007;4:244–248.
20. Norcini JJ, Burch V. Workplace-based assessment as an educational tool: AMEE Guide No. 31. *Med Teach* 2007;29:855–871.
21. Hofstede G. Cultural difference in teaching and learning. *Int J Intercult Relat* 1986;10:301–332.
22. Hofstede G. *Culture's Consequences, Comparing Values, Behaviors, Institutions, and Organizations Across Nations*, 2nd ed. Thousand Oakes, CA: Sage Publications 2001.
23. De Lima AA, Henquin R, Thierer J, Paulin J, Lamari S, Belcastro F, van der Vleuten CPM. A qualitative study of the impact on learning of the mini clinical evaluation exercise in postgraduate training. *Med Teach* 2005;27:46–52.
24. Wiles CM, Dawson K, Hughes TAT, Liewelyn JG, Morris HR, Pickersgill TP, Robertson NP, Smith PEM. Clinical skills evaluation of trainees in a neurology department, *Clin Med* 2007;7:365–369.
25. Kogan JR, Holmboe ES, Hauer KE. Tools for direct observation and assessment of clinical skills of medical trainees: A systematic review. *JAMA* 2009;302:1316–1326.
26. Gale R, Grant J. Managing change in a medical context: Guidelines for action, AMEE Medical Education Guide No. 10. *Med Teach* 1997;19:239–249.

27. Miller GE. The assessment of clinical skills/competence/performance. *Acad Med* 1990;65(9 Suppl):S63–S67.
28. Van der Vleuten CPM, Scherpbier AJJA, Dolmans DHJM, Schuwirth LWT, Verwijnen GM, Wolfhagen HAP. Clerkship assessment assessed. *Med Teach* 2000;22:592–600.
29. Wass V, van der Vleuten C, Shatzer J, Jones R. Assessment of clinical competence. *Lancet* 2004;357:945–949.
30. Driessen EW, van Tartwijk J, Govaerts M, Teunissen P, van der Vleuten CPM. The use of programmatic assessment in the clinical workplace: A Maastricht case report. *Med Teach* 2012;34:226–231.
31. Spencer J. Learning and teaching in the clinical environment. *BMJ* 2003;326:591–594.
32. Ramani S, Leinster S. AMEE Guide no. 34: Teaching in the clinical environment. *Med Teach* 2008;30:347–364.
33. Kilminster S, Cottrell D, Grant J, Jolly B. AMEE Guide No. 27: Effective educational and clinical supervision. *Med Teach* 2007;29:2–19.
34. Ende J. Feedback in clinical medical education. *JAMA* 1983;250:777–781.
35. Cantillon P, Sargeant J. Giving feedback in clinical settings. *BMJ* 2008;337:a1961.
36. Nicholson S, Cook V, Naish J, Boursicot K. Feedback: Its importance in developing medical student's clinical practice. *Clin Teach* 2008;5:163–166.
37. Van de Ridder JMM, Stokking KM, McGaghie WC, ten Cate OThJ. What is feedback in clinical education? *Med Educ* 2008;42:189–197.
38. Van Hell EA, Kuks JBM, Raat AN, van Lohuizen MT, Cohen-Schotanus J. Instructiveness of feedback during clerkships: Influence of supervisor, observation and student initiative. *Med Teach* 2009;31:45–50.
39. Norcini JJ. The power of feedback. *Med Educ* 2010;44:16–17.
40. Shute VJ. Focus on formative feedback. *Rev Educ Res* 2008;78:153–189.
41. Archer J. State of the science in health professional education: Effective feedback. *Med Educ* 2010;44:101–108.
42. Dekker H, Schönrock-Adema J, Snoek JW, van der Molen T, & Cohen-Schotanus J. Which characteristics of written feedback are perceived as stimulating students' reflective competence: an exploratory study. *BMC medical education* 2013;13(1), 94.
43. Epstein RM, Hundert EM. Defining and assessing professional competence. *JAMA* 2002;287:226–235.

44. Hauer KE, Holmboe ES, Kogan JR. Twelve tips for implementing tools for direct observation of medical trainees' clinical skills during patient encounters. *Med Teach* 2011;33:27–33.
45. Cilliers FJ, Schuwirth LW, Adendorff HJ, Herman N, van der Vleuten CP. The mechanism of impact of summative assessment on medical students' learning. *Adv Health Sci Educ* 2010;15:695–715.
46. Larsen DP, Butler AC, Roediger HL III. Test-enhanced learning in medical education. *Med Educ* 2008;42:959–966.
47. Wood, T. Assessment not only drives learning, it may also help learning. *Med Educ* 2009;43: 5–6.
48. Gleeson F. Assessment of clinical competence using the objective structured long examination record (OSLER). *Med Teach* 1997;19:7–14.
49. Roop SA, Pangaro L. Effect of clinical teaching on student performance during a medicine clerkship. *Am J Med* 2001;110:205–209.
50. Smith PB, Peterson MF, Schwartz SH. Cultural values, sources of guidance, and their relevance to managerial behaviour: A 47-nation study. *Journal of Cross-Cultural Psychology* 2002;33(2):188–208.
51. Holmboe ES. Faculty and the observation of trainees' clinical skills: Problems and opportunities. *Acad Med* 2004;79:16–22.
52. Boursicot K, Etheridge L, Setna Z, Sturrock A, Ker J, Smee S, Sambandam E. Performance in assessment: Consensus statement and recommendations from the Ottawa conference. *Med Teach* 2011;33:370–383.
53. Tokode OM, Dennick R. A qualitative study of foundation doctors' experiences with mini-CEX in the UK. *Int J Med Educ* 2013;4:83–92.
54. Dornan T, Boshuizen H, King N, Scherpbier A. Experience-based learning: A model linking the processes and outcomes of medical students' workplace learning. *Med Educ* 2007;41:84–91.
55. Mennin SP, Kalishman S. Student assessment. *Acad Med* 1998;73(9 Suppl):S46–S54.
56. Crossley J, Humphris G, Jolly B. Assessing health professionals. *Med Educ* 2002;36:800–804.
57. Daelmans HEM, Hoogenboom RJI, Donker AJM, Scherpbier AJJA, Stehouwer CDA, van der Vleuten CPM. Effectiveness of clinical rotations as a learning environment for achieving competences. *Med Teach* 2004;26:305–312.

58. Veloski J, Boex JR, Grasberger MJ, Evans A, Wolfson DB. Systematic review of the literature on assessment, feedback and physicians' clinical performance: BEME Guide No. 7. *Med Teach* 2006;28:117–128.
59. Epstein, RM. Assessment in medical education. *N Engl J Med* 2007;356:387–396.
60. Hattie J, Timperley H. The power of feedback. *Rev Educ Res* 2007;77:81–112.
61. Norcini JJ, Anderson B, Bollela V, Burch V, Costa MJ, Duvivier R, Galbraith R, Hays R, Kent A, Perrot V, Roberts T. Criteria for good assessment: Consensus statement and recommendations from the Ottawa 2010 Conference. *Med Teach* 2011;33:206–214.
62. Pratt DD, Kelly M, Wong WSS. Chinese conception of “effective teaching” in Hongkong: Towards culturally sensitive evaluation of teaching. *Int J Lifelong Educ* 1999;18(4):241–258.
63. Hoffman KG, Donaldson JF. Contextual tensions of the clinical environment and their influence on teaching and learning. *Med Educ* 2004;38:448–454.
64. Hofstede G, de Hilal AVG, Malvezzi S, Tanure B and Vinken H. Comparing Regional Cultures within a Country: Lessons from Brazil. *Journal of Cross-Cultural Psychology* 2010;41(3):336–352.
65. Bik OPG. *The Behavior of Assurance Professionals: A Cross-cultural Perspective*. [PhD thesis University of Groningen]. Delft: Eburon Academic Publisher; 2010.
66. Swanson DB, Norman GR, Linn RL. Performance-based assessment: Lessons from the health professions. *Educ Res* 1995;24:5–11.
67. Schuwirth LWT, Southgate L, Page GG, Paget NS, Lescop JM, Lew SR, Wade WB, Baron-Maldonado M. When enough is enough: A conceptual basis for fair and defensible practice performance assessment. *Med Educ* 2002;36:925–930.
68. Van der Vleuten CPM, Schuwirth LWT. Assessing professional competence: From methods to programmes. *Med Educ* 2005;39:309–317.



