

Accepted Manuscript

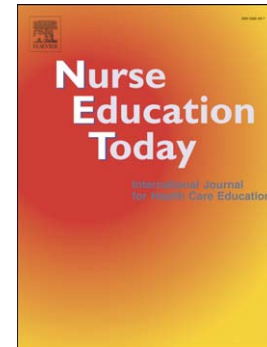
Application of Best Practice Guidelines for Osces – An Australian Evaluation
of their Feasibility and Value

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PII: S0260-6917(15)00038-6
DOI: doi: [10.1016/j.nedt.2015.01.007](https://doi.org/10.1016/j.nedt.2015.01.007)
Reference: YNEDT 2874

To appear in: *Nurse Education Today*

Accepted date: 19 January 2015



Please cite this article as: Mitchell, Marion L., Henderson, Amanda, Jeffrey, Carol, Nulty, Duncan, Groves, Michele, Kelly, Michelle, Knight, Sabina, Glover, Pauline, Application of Best Practice Guidelines for Osces – An Australian Evaluation of their Feasibility and Value, *Nurse Education Today* (2015), doi: [10.1016/j.nedt.2015.01.007](https://doi.org/10.1016/j.nedt.2015.01.007)

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TITLE: APPLICATION OF BEST PRACTICE GUIDELINES FOR OSCEs – AN AUSTRALIAN EVALUATION OF THEIR FEASIBILITY AND VALUE.

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Acknowledgement

We would like to acknowledge the contribution of the lecturers and students at all four sites, without whom, this study was not possible.

TITLE

Application of Best Practice Guidelines for OSCEs – an Australian evaluation of their feasibility and value.

INTRODUCTION

This paper builds on previous research in which seven Best Practice Guidelines (BPGs) for the design and conduct of Objective Structured Clinical Examinations (OSCEs) in undergraduate nursing programs were developed and tested in one site (Mitchell et al., 2009; Nulty et al., 2011). The BPGs evolved following an extensive literature review (Mitchell et al., 2009), the trialling and piloting of local initiatives (Nulty et al., 2011), and consideration by experienced nurses, educators, and academics from both Australia and the United Kingdom. That research found that students' learning behaviours and outcomes were improved by the application of these guidelines to reform the way OSCEs were conducted. However, it also signalled that further work was required to determine if the guidelines had applicability for OSCEs in other settings where the context surrounding the teaching and learning of students was significantly different, or if further refinement of the guidelines was required to ensure broad applicability to OSCEs within nursing and midwifery.

The BPGs comprise a new and significant contribution to a systematic approach to the development and management of OSCEs with a professional consensus about what encompasses high quality student clinical performance. A commentary written by the project team provides a framework to guide educators on the successful implementation of OSCEs grounded in the BPGs. The framework provides the pedagogical principles underpinning each BPGs and the importance for meaningful student learning (Henderson et al., 2013). Significantly OSCEs are widely used within nursing (Mitchell et al., 2009; Rushforth, 2007; Selim et al., 2012), midwifery (McClimens et al., 2012; Barry, 2012), medicine (Avelino-Silva et al., 2012), psychology (Yap et al., 2012) and allied health professions such as in physiotherapy (Wessel et al., 2003).

Short skill focused OSCEs and work-based assessment strategies may fail to capture 'a whole person' assessment (Crossley and Jolly, 2012) which is of particular importance within the nursing and midwifery professions where integrated contextual considerations of client care is essential (Nursing and Midwifery Board of Australia, [NMBA], 2013). OSCEs have significant advantages in the area of clinical practice and standards of assessment including:

assessment equivalence as each student is assessed with the same scenario/s; assessor objectivity with pre-determined scenarios and educationally sound marking guides; and, in-built safety for both students and ‘patients’ who are substituted with mannequins, actors or peers. Consequently, students are not ‘practicing’ on actual patients. Used in this format, OSCEs enable student learning to be the focus, as opposed to work-based learning on clinical practicum which has patient care central and student learning a peripheral outcome.

It is clearly essential, that appropriate professional standards are set, achieved and adequately assessed if patient safety and optimal care is to be assured in clinical practice (NMBA, 2013). OSCEs are accepted as an effective education strategy for students to prepare and demonstrate attainment of these requisite standards (Brosnan et al., 2006) when they are formulated on sound pedagogy. To further progress academic debate and the utility of OSCEs within nursing and midwifery, it was important to extend the evaluation of OSCEs grounded in the BPGs beyond a one site/cohort evaluation (Nulty et al., 2011). The positive outcomes of Nulty et al.’s study (2011) provided support for an extension and trial of the OSCEs ~~BPGs~~ to more diverse settings and student groups.

AIMS

The aim of this current study was to evaluate the feasibility and utility of using BPGs within an OSCE format in a broad range of tertiary education settings with nursing and midwifery students. Specifically, the focus was on three aspects of evaluation which informed the overall aim. Firstly, how feasible was it to apply the BPGs to modify OSCEs in a course; secondly, what was the value of the revised OSCEs (based on the BPGs) from a student’s learning perspective; and thirdly, did the BPG-revised OSCEs better prepare students for clinical practice when compared with the original OSCEs?

METHOD

Four diverse cohorts and settings were identified to test the BPGs. The characteristics of the four sites and their participant cohorts were selected to provide maximum diversity (see Table 1). Under-graduate and post-graduate students enrolled in a course which included an OSCE and their respective lecturers teaching in the course were invited to participate. Students varied in their level of academic program and were from several Australian States

and Territories within nursing and midwifery programs. Ethical approval was received from all four respective institutions.

Table 1 near here

Prior to the commencement of this project, the research team reviewed each BPG (Nulty et al., 2011) for their applicability to varied and divergent student groups, remembering that the original BPGs were tested in only one site with undergraduate nursing students. Four BPGs (BPG 1, 2, 5 and 7) were refined as a result to broaden their applicability (see Table 2). A semantic change was made to BPG 1 to provide a clearer intent whereas changes to others resulted in more comprehensive BPGs that gave additional direction for their use. These BPGs were used to inform the OSCEs at all sites.

Table 2 near here

Two members of the research team met with the lecturers at each site to modify the extant OSCE based on the refined BPGs. This process worked well and the new modified OSCEs and teaching methods were developed and subsequently implemented within the four courses. As outlined in Table 1, one site had paid actors. They were well briefed on the part they were to play including responses to students' queries/questions. They all had previous experience with similar student cohorts and OSCEs. Two sites had peers from the same intake who were therefore known to the students. Students were instructed to act as patients without any prompting to their colleague. The last site had high fidelity mannequins which were programmed for the scenario.

The OSCE scenarios met the objectives of individual site courses and were between 30 and 60 minutes duration followed by feedback sessions. Students were expected to demonstrate good communication and cultural sensitivity. In brief, the scenarios included the following:

- Site 1 – First year Bachelor of Midwifery students were presented with either an overall assessment of an in-hospital post-partum mother OR an overall assessment of a healthy new-born baby. (For more detail please see Mitchell et al., 2014).
- Site 2 – First year Bachelor of Nursing students were presented with either a client (with his wife present) who progressively deteriorated and required Basic Life Support *or* an adolescent with chronic asthma (and his anxious mother) where the son was not adhering to his preventative medication regime. Each student was allocated a

role to play within these scenarios and this may have included: one of the nurses, mother, son, voice of the patient or patient's wife.

- Site 3 – Masters of Rural and Remote Nursing students were presented with either a scenario with a client requiring a neurological assessment *or* a respiratory assessment. Both scenarios required psychological and social assessments (for more detail please see Jeffrey et al., 2014).
- Site 4 – First year Bachelor of Nursing students were presented with an overall assessment of a health adult.

Data were collected at each site on the efficacy of the old and new OSCEs; this included surveys, focus groups and interviews from appropriate informants (see data collection). Comparisons of how the revised OSCEs performed relative to the previous ones were made, together with an examination of the effectiveness of the BPGs-based revisions. Finally, an overall project evaluation occurred where data from all sites and sources were examined and recommendations made. Discussion and feedback was sought from an international reference group at key times during the two-year time frame. The reference group had members including medical, nursing and psychologist-simulation experts.

Data collection

Data collection was replicated at all sites and included student surveys and focus groups and lecturer interviews. Specifically, the feasibility of implementing the BPGs within an OSCE was determined by feedback from participating lecturers. Firstly, the process of implementation of the BPGs to inform the modification of previous OSCEs and their teaching and assessment methods was contemporaneously documented by two of the researchers who helped the academics make any necessary changes consistent with the BPGs. Secondly, feedback occurred via semi-structured interviews of the same lecturers following the OSCE assessment. This captured additional data on actual implementation of the OSCEs. Lecturers were specifically asked their perceptions on how the new OSCEs (grounded in the BPGs) prepared their students for clinical practicum when compared to previous years. Notes taken at interviews, meetings and focus groups were checked by participants and corrections made to ensure accuracy.

The value of the OSCEs from the students' perspective was evaluated by student surveys and focus groups. The survey consisted of 32 forced-answer items and one free-text item. It was piloted for clarity and understanding with a group of students not enrolled in the project (more detail on the survey can be found elsewhere – Mitchell et al., 2013). Student surveys were anonymous and the student focus group participants signed voluntary participation consent forms. To limit bias, the focus groups were conducted by two researchers external to the courses. The same two researchers collected data at all sites for consistency. The third area of data collection centred on how the OSCEs prepared students for clinical practice. Data were drawn from both student and lecturers' feedback.

Collective evaluation of data across project sites - Subsequently data from all sources provided the basis for a 'whole of project' evaluation. The four sites' results were examined and interpreted by the research team and reference group. In addition, an external independent evaluator (professor of medical education) provided a critique of the study.

Data analysis

Mixed methods with qualitative and quantitative data are an effective means of capturing perspectives from multiple stakeholders and promote a comprehensive understanding of the subject matter under study (Jones and Budge, 2006; Annells and Whitehead, 2007). This combined technique adds strength as studies with qualitative or quantitative data alone have weaknesses that are countered when a study incorporates both forms of data (Cresswell, 2009).

Surveys were analysed using the statistical program *Predictive Analysis Software* (PASW Statistics® Version 19; SPSS Inc., Chicago, IL). Frequencies and means were calculated. The open-ended question on the survey, interviews and focus groups were subjected to thematic content analysis by a research team member and then independently analysed by a second researcher to validate the themes thereby supporting the trustworthiness and credibility of the qualitative results (Holloway and Wheeler, 2010). The quantitative and qualitative data were converged to provide a better understanding of the perceptions of both students and lecturers with equal weighting given to the qualitative and quantitative data. The combining of the two forms of data analysis helped us better understand and interpret the study results (Creswell, 2009).

RESULTS

Overall, 691 students participated in revised OSCEs. Surveys were completed by 557 students (response rate 81%); 91 students gave further feedback through focus groups and 14 lecturers participated in interviews (88%).

The data were examined in relation to the following three questions: (1) Is it feasible to use the BPGs to modify OSCEs within a course? 2) What is the value of the modified OSCEs from students' perspective? (3) Did the BPG-modified OSCEs better prepare students for practice?

The seven BPGs were considered and applied to modify existing OSCEs (see Table 3). The original OSCE changes varied across sites with the introduction of a global marking guide introduced in all.

Table 3 near here

Universally, the BPGs could be readily adopted to modify the OSCEs, without any changes to the BPGs. The lecturers indicated that the BPGs provided a clarity that enabled them to confidently implement the BPGs modified OSCE. For example, they all positively reflected on their new scenario choices; the processes of when to release the OSCE related student information; the global marking guide initiative and the need for student practice-time. Lecturers commented that they appreciated the pedagogy underpinning the BPGs which they considered “...would help them get it (new OSCEs) into the curriculum and get their colleagues on-side” (Lecturers - Site 2 and Site 3). The value of the OSCE was more obvious and transparent and therefore more readily accepted by the teaching team.

Students provided feedback regarding the value of the OSCEs from their perspective.

Students perceived the scenarios as ‘true to life’ and that there was an effective integration of the required professional skills and behaviours within the OSCE preparation and assessment. The realistic nature of the scenarios provided authenticity to the assessment as did the requirement that students engage with the client/patient in a holistic and integrated manner. A post-graduate student highlighted the expectation that they were able to demonstrate an integration of advanced nursing skills and behaviours when she said:

“We needed to show we really care for the patients- not just do the tasks.”

(Student - site 3)

Although the BPGs do not recommend formative or summative assessment, there were diverging student comments on this which may indicate how the type of assessment affected student learning. Students either appreciated that their course used the OSCE for formative assessment, or conversely, lamented the fact that they really did not know how well they did as they received broad descriptive formative feedback:

“I wanted to know if I just scraped through the assessment or if I was a high distinction student – do I need to work harder? We didn’t get that feedback.” (Student - site 3) and conversely,

“The OSCE/SIM is a pretty good way of getting an idea about what it would be like in real clinical settings. Knowing that it is not an assessment takes the tension off me, it enables me to participate and raise questions more freely, and I could really ‘act out’.” (Student - site 2)

There was a strong sense that students’ engagement in the OSCEs prepared them well for their clinical practice. Students indicated through both survey and focus groups that they had more confidence in performing the practice activity after completing the OSCE. They were challenged by the scenario content which extended their knowledge and practice in a way that supported their preparedness for clinical practice. First year nursing students who were yet to go out on their first clinical practicum said:

“It’s a big confidence booster [completing the OSCE] – it’s such a hard semester and then you think... I can do it.”(Student – Site 4) and

“I think there should be more OSCE SIMs during the semester, not only are they engaging for the students, but they get us all thinking about the skills we have and haven’t quite mastered yet - so as to better them in time for clinical.” (Student - site 2)

Similarly, a post-graduate student described how the OSCE was a valuable learning tool as it

provided essential skills for professional practice as a remote area nurse. She said:

“[The scenario was based on] *The biggest skill we need - assessment and history taking- it's the cornerstone.*” (Student Site 3)

Not only students considered that the OSCE prepared students for clinical practice – a lecturer agreed that the OSCE processes formed a significant component of student practice:

“The students see this OSCE as their first [clinical] experience.” (Lecturer – site 1)

The opportunity to practise in a ‘real world type’ scenario assisted students to integrate and make sense of their learning. Students indicated that this positively influenced how they perceived their ability.

Following student and academic evaluations the research team and reference group members made small changes to the BPGs (see Table 2). The major change was to divide BPG 2 into two as it was thought to involve two distinct concepts. The first concept was pedagogical in nature and related to the need to explicitly state that clinical practices that were most relevant to student learning should form the basis of the OSCE. The second concept was that the selected practices should be ones that were likely to be commonly and/or significantly encountered in practice thus ensuring the relevance to students. Other changes were minor making more explicit the intent of the BPGs (see Table 2).

Further evaluation of the overall project was conducted by the external evaluator who conducted individual interviews with all but two team members, reference group members, and site lecturers. These interviewees valued the significant change that they implemented to their OSCEs, in particular encouraging a ‘whole of patient’ perspective in student learning. In addition, they considered that all seven of the BPGs were equally important to the success of the OSCE process. The independent evaluator wrote:

“There was wide agreement from all stakeholders that the guidelines placed the OSCE ‘technology’ into a conceptually new light that made them transformational for the nursing context. Furthermore there was wide understanding that all the BPG were useful in those contexts and that if one or more of the guidelines were not followed, then it would be unlikely that the translation process would be entirely satisfactory.” (Jolly, 2013 p.75)

DISCUSSION

These results suggest that modified OSCEs developed and taught using the seven BPGs were feasible to implement with both under and post-graduate students. The modified OSCEs were realistic and valued by students and lecturers as they were perceived to be ‘true to life’ and provided a means for students to engage in every day and important clinical situations. The OSCE assessments promoted student engagement and learning which gave them a perception of their preparedness (or lack thereof) for clinical practice. The final eight BPGs offer a logical and procedural set of guiding principles that have the capacity to further inform OSCE development and assessment.

In regards to assessment, Sadler (2009) argues that no matter how clearly criteria are articulated, they are still just words on a page and therefore open to interpretation. Similarly, the BPGs can be interpreted differently and therefore, ‘exemplars’ help students and lecturers understand what assessment criteria mean in the sense of ‘performance standards’ while striving for consistency and fairness in assessment (Sadler, 2002). Detailed procedural illustrations of how the BPGs were interpreted and applied in different contexts is supplied here, thereby helping users of the BPGs to translate them in a consistent manner. Similarly, other papers (Henderson et al., 2013; Mitchell et al., 2013) go further, illustrating in more detail the way the BPGs were used to guide teaching, learning and practice.

Students valued the OSCE which supported their understanding and performance within the role of a nurse or midwife. When students were not in the role of ‘the nurse’ the OSCE was felt by the students to be of reduced value. However, in the main, the OSCEs presented students with what they regarded as realistic scenarios where they were required to conduct an integrated assessment of a client. Preparation for the OSCE assessment focussed student learning on real world nursing (and midwifery) knowledge, skills and attributes which in turn shaped their practice development in such a way that they felt the OSCEs prepared them effectively for their imminent clinical practicum or practice setting. This went some way to bridging the preparation for practice gap (Mooney, 2007; Brosnan, 2006).

Preparing students for practice was not as successfully achieved in another study with student midwives who did not consider their OSCE scenarios reflected real life situations (Muldoon et al., 2014). This may be due to the narrow focus of Muldoon et al.’s (2014) scenario that related only to lactation and infant feeding. The lack of integration of holistic assessment may

also have contributed to the students' perception of being unable to adequately demonstrate their practical abilities. Interviews or focus group discussions with the student midwives in Muldoon et al.'s study (2014) would have provided more understanding of the survey results. The value of the BPGs in the current study strongly supports OSCEs to have an integrated assessment as students find them true to life and therefore relevant to their clinical practice.

The relevance to clinical practice that students in the current study reported was high, as too, were their levels of confidence surrounding their imminent clinical practicum. In graduate nurses, higher levels of confidence and adequate preparation for their clinical role have been associated with lower levels of stress which can support clinical performance (Duchscher, 2008). Within the current study, students of all levels considered they were well prepared for their clinical practicum. It is argued that this is a significant project outcome that advances the pedagogy underpinning students' preparation for clinical practice by way of well-designed OSCEs.

The project team's reflections on the overall project evaluation provided the foundation for an implementation framework around the BPGs that was instrumental in maximising feasibility, value, and applicability of the BPGs. The framework was derived from exploring and describing the processes and situations that contributed to the success of the project with an examination of the pedagogical principles that informed each BPG. The framework comprises four stages defined as Opportunity, Organisation, Oversight, and Outcomes (the Four Os) and has been published elsewhere (Henderson et al., 2013).

Study Limitations

At one site not all students were able to role play or enact the 'nurse' role, within the OSCE scenario. Some found this less valuable to their learning than if they had been the nurse in the scenario. The logistics of managing very large class numbers and OSCEs highlights the complexity of operationalising clinical assessments. This study was restricted to nursing and midwifery. What is now needed is to test the generic applicability of the guidelines across other health professions.

CONCLUSION

This large scale, diverse study across several Australian States and Territory with over 550 under-graduate and post-graduate students of nursing and midwifery was designed to assess

the feasibility of using seven published BPGs to modify the use of OCSEs in the teaching and assessment of students. All lecturers successfully used the BPGs to modify and implement OSCEs within their curriculum. They did this *without* changes to the BPGs – illustrating their broad applicability to a wide range of educational contexts. Subsequent examination of the BPGs resulted in their further refinement to a set of eight BPGs that provide a framework for their use. This framework provides a logical guide to the application of the BPGs in a way that is entirely consistent with best practice curriculum design principles.

Importantly, the students valued the realistic nature of the modified OSCE scenarios which provided an integrated ‘whole of person’ assessment philosophy. Preparing for, and undertaking the OSCEs contributed to students’ confidence and preparation for clinical practice. The integrated aspect of the OSCEs that is pedagogically supported by the BPGs counters other interpretations (for example skills stations) of student assessments within simulated environments. Readily translated BPGs for OSCEs that improve student learning and preparation for clinical practice have the potential to make a significant contribution to nursing curricula.

Acknowledgement

We would like to acknowledge the contribution of the lecturers and students at all four sites, without whom, this study was not possible.

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Table 1: Characteristics of four sites

Characteristic	Site 1	Site 2	Site 3	Site 4
Students (N = 691)	36	457	15	183
Lecturers (12 = experienced; 4 = novice)	2	4	5	5
Program	Bachelor of Midwifery (1 st Year)	Bachelor of Nursing (1 st Year)	Masters Nursing (Remote Area Nursing)	Bachelor of Nursing (1 st year)
Program level	Under- graduate	Under- graduate	Post- Graduate	Under- graduate
Location	Metropolitan State A	Metropolitan State B	Remote Territory A	Metropolitan State C
Teaching	13-week semester	13-week semester	Intensive 2-week block	13-week semester
‘Patients’	Peers	High fidelity manikins & peer actors	Paid actors	Peers
Number of students in each scenario	1 (plus student peer as the patient)	5	1	1 (plus student peer as the patient)

Table 2: Original Best Practice Guidelines (BPGs), those used in this study, and final recommended Best Practice Guidelines.

Original BPGs 2011 (Nulty et al., 2011)	Tested BPGs 2011/2012	Final BPGs
1. Practice related directly to the delivery of safe client/patient care.	1. Practice related directly to the delivery of safe <u>client/patient centred care</u> .	1. Practices, attitudes and skills which are most likely to be commonly and/or significantly encountered.
2. Practices which are most relevant to OSCE learning and assessment and likely to be commonly encountered in clinical practice.	2. Practices which are most relevant to OSCE learning and assessment and likely to be <u>commonly and/or significantly</u> encountered in practice.	2. Knowledge, attitudes and skills which are most relevant to OSCE learning and assessment.
3. Be judged via a holistic marking guide to enhance both the rigor of assessment and reliability.	3. Be judged via a holistic marking guide to enhance both the rigor of assessment and reliability.	3. Be structured and delivered in a manner which aligns directly with mastery of desired knowledge, attitudes and skills.
4. Require students to perform tasks in an integrated rather than piecemeal fashion by combining assessments of discrete skills in an authentic manner	3. Require students to perform tasks in an integrated rather than piecemeal fashion by combining assessments of discrete skills in an authentic manner	4. Be appropriately timed in the sequence of students' learning to maximise assimilation and synthesis of disparate course content and to minimise the potential for students to adopt a piecemeal, superficial learning approach.

5. Be structured and delivered in a manner which aligns directly with mastery of desired knowledge and skill. This alignment should be both internal to the course and aligned prospectively with clinical tasks likely to be encountered.	5. Be structured and delivered in a manner which aligns directly with mastery of desired knowledge and skill. This alignment should be both internal to the course and aligned prospectively with clinical tasks likely to <u>be commonly and/or significantly</u> encountered in practice.	5. Be judged via a holistic marking guide to enhance both the rigor of assessment and reliability.
6. Be appropriately timed in the sequence of students' learning to maximise assimilation and synthesis of disparate course content and to minimise the potential for students to adopt a piecemeal, superficial learning approach.	6. Be appropriately timed in the sequence of students' learning to maximise assimilation and synthesis of disparate course content and to minimise the potential for students to adopt a piecemeal, superficial learning approach.	6. Require students to perform tasks in an integrated rather than piecemeal fashion by combining assessments of discrete skills in an authentic manner.
7. Allow for ongoing practice of integrated clinical assessment and intervention skills, thereby also ensuring the appropriate and timely use of feedback to guide students' development.	7. Allow for ongoing practice of integrated clinical assessment and intervention skills <u>in a safe supportive environment</u> , thereby ensuring the appropriate and timely use	7. Knowledge, attitudes and skills related directly to the delivery of safe patient-centred care.

	of feedback to guide students' development and ongoing reflection.	
		8. Allow for ongoing practice of integrated clinical assessment and intervention skills in a secure supportive environment, thereby ensuring the appropriate and timely provision of feedback to guide students' development and ongoing reflection.

Table 3: Changes made to OSCEs at the four sites with reference to the BPGs.

Site 1	Site 2	Site 3	Site 4
<p>a) BPG 1 & BPG 2</p> <p>Scenarios changed and based on commonly encountered situations.</p> <p>b)BPG 3</p> <p>Global marking guide replaced check box list of skills.</p> <p>c) BPG 5</p> <p>Timing of OSCE information released closer to assessment time.</p> <p>d) BPG 6</p> <p>Required students to integrate an entire person assessment (from a single body system assessment).</p>	<p>a) BPG 3</p> <p>Global marking guide.</p> <p>b) BPG 7</p> <p>Practice time with academic feedback.</p> <p>c) OSCE/Sim development and processes provided consistency across cohort.</p>	<p>a) BPG 3</p> <p>Global marking guide– previously no marking guide.</p> <p>b) BPG 7</p> <p>More structured practice time prior to assessment.</p> <p>c) OSCE development and processes provided consistency across cohort.</p>	<p>No changes needed - changes had already been implemented.</p>

Highlights

- The 8 BPGs offer pedagogical principles to inform OSCE development and delivery
- These BPGs provide academics with procedural guidance to the development of OSCEs
- Students and academics valued the clinical application the OSCEs provided
- The BPGs are equally applicable to under-graduate and post-graduate students