

# Chapter 3

## Implementation and Evaluation of the Post-Practicum Oral Clinical Reasoning Exam



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### 3.1 Introduction

Clinical reasoning is intrinsic to all aspects of nursing care (Fonteyn & Ritter, 2008) and critical to patient safety (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). Nurses with poor clinical reasoning skills often fail to recognise and respond to the critical patient cues that are precursors to impending patient deterioration (Levett-Jones et al., 2010). However, while the ability to ‘think like a nurse’ is essential to safe practice, teaching and assessing a complex cognitive skill such as clinical reasoning can be challenging. This chapter describes the implementation and evaluation of an innovative and clinically relevant post-practicum oral exam designed to facilitate and assess nursing students’ clinical reasoning skills. While clinical reasoning is often taught and assessed in preparation for clinical placements, a post-practicum assessment is a valuable approach for identifying if and to what extent students’ clinical learning experiences influence their acquisition of this essential skill. This chapter provides a detailed overview of the development and evaluation of the post-practicum clinical reasoning exam (PPCRE) and guidelines for educators interested in adopting this novel approach.

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## 3.2 Background

### 3.2.1 *Defining Clinical Reasoning*

‘Clinical reasoning’ is often used interchangeably with terms such as ‘clinical judgement’, ‘problem-solving’, ‘decision-making’ and ‘critical thinking’. While clinical reasoning is informed by a critical thinking ‘disposition’ (Scheffer & Rubenfeld, 2000), it is essential to define clinical reasoning and distinguish it from other more generic cognitive skills. Without this clarity, the development of teaching and assessment procedures will be at best ill-informed and at worst poorly constructed and confusing for students. Consequently, a number of definitions of clinical reasoning have emerged. For example, Fonteyn and Ritter (2008) suggest that clinical reasoning is a discrete, systematic and cyclical problem-solving process; and Tanner (2006) describes clinical reasoning as the processes by which nurses make clinical judgements, by generating alternatives, weighing them against the evidence and choosing the most appropriate. For the purpose of this chapter, we define clinical reasoning as a ‘process by which nurses collect cues, process the information, come to an understanding of a patient problem or situation, plan and implement interventions, evaluate outcomes, and reflect on and learn from the process’ (Levett-Jones, 2018, p. 4). A diagram illustrating this approach to clinical reasoning is provided in Fig. 3.1.

The clinical reasoning cycle represents the evolving nature of patient assessment and clinical interventions, along with the importance of evaluation and reflection on care provision. Beginning at 1200 h, the clinical reasoning cycle moves in a clockwise direction following eight main stages: *look, collect, process, decide, plan, act, evaluate* and *reflect*. Although each stage is presented as a separate and distinct element in this diagram, clinical reasoning is a dynamic process with nurses often combining one or more stages and moving backwards and forwards between them before reaching a decision and executing appropriate nursing actions.

### 3.2.2 *The Significance of Clinical Reasoning*

Over the last decade, healthcare has become increasingly complex and dynamic. Changes in patient acuity, with many patients often older and sicker, coupled with rapid patient turnover, mean that the work of healthcare professionals has become much more challenging than it was 10 or 20 years ago. Against this background, the ability to respond to complex and emergent clinical problems requires not only psychomotor skills and knowledge but also sophisticated thinking abilities (Levett-Jones et al., 2010). Nurses therefore need highly developed clinical reasoning skills to ensure safe and effective patient care.

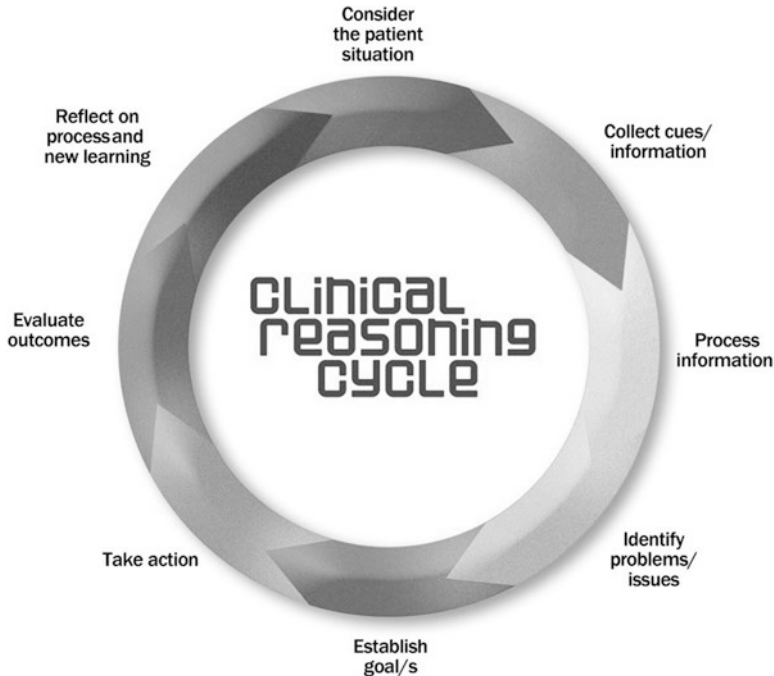


Fig. 3.1 The clinical reasoning cycle. (Levett-Jones et al., 2010)

### 3.2.3 Teaching and Assessing Clinical Reasoning

Graduate nurses are frequently required to care for and make decisions about complex patients with diverse healthcare needs in time-sensitive situations. However, many contemporary teaching methods have proven largely ineffective in helping nursing students develop the requisite level of clinical reasoning skills needed for their future practice (Lapkin, Levett-Jones, Bellchambers & Fernandez, 2010). For example, a large-scale study conducted in the United States by del Bueno (2005) identified that 65–70% of graduate nurses demonstrated an unsafe level of clinical reasoning skills. In an Australian study, graduates demonstrated similar deficits in clinical reasoning and a limited ability to recognise and respond appropriately to patient deterioration (Cioffi, Salter, Wilkes, Vonu-boriceanu, & Scott, 2006). These studies illustrate the need for more attention to the teaching and assessment of nursing students' clinical reasoning skills, along with more effective pedagogical approaches.

Multiple methods have emerged to teach clinical reasoning, for example, simulation-based learning activities (Lapkin et al., 2010), e-learning modules (Hoffman et al., 2010; Sinclair et al., 2017), written assessment items (Cioffi et al., 2006) and think aloud activities (Fonteyn & Ritter, 2008). However, opportunities for active engagement in authentic, experiential, deliberate learning and assessment activities have emerged as one of the most effective approaches for helping nursing

students acquires high-level clinical reasoning skills (Lapkin et al., 2010). These types of teaching and learning activities underscore the importance of assessment *for* learning, rather than just assessment *of* learning (Levett-Jones, 2018). They also create individualised opportunities for purposeful learning designed to facilitate deep thinking about specific aspects of clinical reasoning. These deliberate practice experiences are most effective when educators provide:

- Clear learning objectives
- Adequate time for problem-solving
- Prompts when needed/appropriate
- Immediate and meaningful feedback
- Opportunities for reflection and repeated practice (Ericsson, Krampe & Tesch-Römer, 1993)

Now that the importance of clinical reasoning skills and the need for effective teaching and learning approaches have been established, the next section of the chapter outlines the development and implementation of the post-practicum oral clinical reasoning exam.

### **3.3 Implementation of the Post-Practicum Oral Clinical Reasoning Exam (PPOCRE)**

#### ***3.3.1 Rationale***

The post-practicum oral clinical reasoning exam (PPOCRE) was designed to facilitate deep thinking about real practice problems. It allows for assessment of nursing students' content knowledge (domain-specific) and process knowledge (clinical reasoning ability). In the project described in this chapter, our aim was to replace a written post-practicum clinical reasoning assessment item with an oral 'think aloud' exam. Although clinical reasoning is often taught and assessed prior to and in preparation for clinical placements, the post-practicum exam was considered to be a valuable method for identifying the impact of students' clinical placement experiences on their cognitive skill acquisition.

In our previous experiences of teaching and assessing clinical reasoning, it had become apparent that students often struggle when attempting to write about how they apply the framework of clinical reasoning to patient care. Additionally, in the course feedback, students had commented that it would be much 'easier' to articulate their clinical reasoning in a conversation than it was in a formal written assignment. Thus, the PPOCRE was conceptualised as a strategy that may address these concerns by using a less rigid assessment approach. Our decision was premised on the assumption that an oral exam had the potential to facilitate students' ability to describe their practice without the constraints imposed by formal academic writing.

### **3.3.2 Preparation**

All second year undergraduate nursing students were required to undertake the PPOCRE as a mandatory assessment item. In the university where the PPOCRE was implemented, clinical reasoning was integrated into all theoretical and practice-based courses in the undergraduate nursing programme. Thus, students had been provided with a number of opportunities to develop their clinical reasoning skills. Additionally, students had attended a 2-week acute care clinical placement immediately prior to the exam, which we anticipated would allow them to further develop their clinical reasoning skills in an authentic and experiential manner. Preparatory information about the PPOCRE was provided on the learning management system Blackboard™, in lectures and in tutorials.

### **3.3.3 Conducting the PPOCRE**

The PPOCRE was conducted by trained assessors who met with individual students in a quiet and private room. The process began by ensuring that students understood the objectives and requirements. Students were then given a verbal clinical handover which outlined key information about four patients (see Table 3.1). The clinical scenarios presented were related to the care of patients with cardiac and respiratory conditions similar to those that students had recently studied in tutorials, lectures and simulations. Additionally, cardiac and respiratory conditions are high prevalence disorders that students would typically encounter during their clinical placements. The patient data and background were not presented in its entirety, but the extent of information provided was consistent with the limited details typically available to nurses at the beginning of a shift. The healthcare records for the patients were also available and included observation charts, progress notes and pathology reports. Additional subjective and objective data about the patients was provided if requested by the student.

Based on the information provided, students were then required to identify which of the four patients would be their first priority. They had 30 min to outline their rationale for this decision and to provide an outline of how they would plan and manage the care of this patient using the clinical reasoning cycle as their organising framework. An iterative ‘think aloud’ approach (Forsberg, Ziegert, Hult & Fors, 2014) was used with students describing the types of questions they would ask the patient, the cues they would collect and analyse, the healthcare professionals they would collaborate with, their nursing diagnosis for the identified patient, as well as their clinical actions and rationales for care. The assessor prompted students, if needed, by asking questions such as: ‘Are any of those cues outside of normal ranges for your patient?’ ‘Which cues support your nursing diagnosis?’ and ‘Why did you select that particular nursing action instead of other possible options?’ Throughout the exam students were expected to use correct healthcare terminology and professional language. The PPOCRE was marked using a structured rubric

**Table 3.1** Transcript of verbal handover provided about the four patients

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*Lucy Mason*

**Introduction**

Mrs. Mason, 90 years old, was admitted 1 week ago with functional decline at home. Her husband is recently deceased and he was her primary carer

**Situation**

Mrs. Mason is awaiting a nursing home placement

**Background**

Mrs. Mason has a history of hypertension, significant hearing loss and rheumatoid arthritis. She is also legally blind

**Assessment**

All observations stable. Mrs. Mason needs help to set up her meals and full assistance with ambulation and hygiene. She is alert and orientated

**Recommendation/request**

For follow-up with social worker today

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*Albert Brown*

**Introduction**

Albert Brown, 70 years old, was admitted 2 days ago after 3 days of fever and increasing sputum production. His GP had started him on oral antibiotics. Mr. Brown called an ambulance when he woke and 'could not catch his breath'

**Situation**

CXR on admission revealed infective exacerbation of COPD secondary to community-acquired pneumonia. Mr. Brown is receiving salbutamol four hourly and ipratropium eight hourly via nebuliser. IV ceftriaxone daily. PIVC to L antecubital fossa

**Background**

Mr. Brown smokes 25 cigarettes per day. He has end-stage COPD and mild CCF

**Assessment**

Mr. Brown's last vital signs were BP, 135/75 mmHg; HR, 110 bpm regular; RR, 26 bpm; T, 38.3; and SpO<sub>2</sub> 94% with 30% oxygen via venturi mask. A sputum sample was sent to pathology yesterday

**Recommendation/request**

For a follow-up CXR today

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*Giorgio Mattiou*

**Introduction**

Giorgio Mattiou (74 years old)

**Situation**

Day 7 since his admission with community-acquired pneumonia (CAP); his sputum pathology is now positive for methicillin-resistant *Staphylococcus aureus* (MRSA), so he has been moved to a single room and is on contact precautions (droplet)

**Background**

History of type 2 diabetes that is relatively well controlled. Last HbA<sub>1c</sub> 7.5%. Hypertension, osteoarthritis (10 years) and a recent right hemisphere stroke (moderate) – 12 weeks ago. Weakness on left side still present. He is able to tolerate thin fluids. Since the stroke, Giorgio sometimes reverts to speaking Greek, his native language

**Assessment**

A: Patent, talking. B: RR 20, SpO<sub>2</sub> 95% RA, air entry is decreased on both sides in the bases and crackles are evident. No signs of increased WOB, green sputum collected, weak cough present. C: BP 140/80, HR 89 irregular, peripheral pulses present, peripherally cool. D: Alert and orientated at present, GCS 15, PEARTL 3+, able to move all his limbs, unsteady gait, transferring from bed to the chair. E: Skin integrity – intact, slight reddened areas on the heels, T 38.1 degrees C, abdomen soft and non-tender, bowel sounds present, bowels opened last evening. F: Tolerating oral fluids well; skin turgor – normal, fluid balance neutral and urine output adequate (using a bottle). G: glucose 8.1.

**Recommendation/request**

Physiotherapist and dietitian review today

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(continued)

**Table 3.1** (continued)*Donald Johnson***Introduction**

Mr. Donald Johnson, 55 years old, has just arrived to the ward from CCU. He is at day 2 after presenting to the hospital via ambulance after complaining of central chest pain for approximately 2 hours and then collapsing at home. NSW chest pain pathway commenced in ED, initially managed with sublingual GTN and morphine

**Situation**

Mr. Johnson's ST elevation was noted on ECG yesterday. He was diagnosed with a STEMI. PCI was performed last night, and he was transferred from coronary care unit to the ward this morning

**Background**

Mr. Johnson's hypertension is well controlled; he has type 2 diabetes (diet controlled), but no other significant history

**Assessment**

On arrival about 15 min ago, Mr. Johnson's observations included the following RR 27, SpO<sub>2</sub> 90% RA, increased WOB, air entry is clear, R = L HR 123, BP 100/65 mmHg, cool peripherals, complaining of pain 8/10. GCS 15, able to move all limbs PEARTL 3+, temp 36.6 °C, 1 x PIVC in right hand. No IV fluids currently. Mr. Parker last voided 4 h ago, his mucosa is moist, and glucose is 14.4 mmol/L

**Recommendation/request**

To remain on bed rest, continuous cardiac monitoring, is awaiting cardiology review this am

which aligned with the stages of the clinical reasoning process (see Table 3.2). Educators were also provided with clear performance criteria for each of the elements of the rubric.

### 3.4 Evaluation of the Post-Practicum Oral Clinical Reasoning Exam

In addition to analysing students' overall performance in the PPOCRE, we also sought to feedback on students' perspectives and experiences. Participant satisfaction data is important both to evaluate the learning experience and to gather suggestions for future improvement (Kirkpatrick, 2009). Despite learner satisfaction often being considered the 'low hanging fruit' in terms of evaluation, educational psychologists suggest that student satisfaction can facilitate self-confidence which can in turn enhance skill development (Pike, 1991). Because this was the first time that the PPOCRE had been used, satisfaction data was considered important, in addition to evidence of student performance.

A literature search was conducted to identify validated instruments for assessing learner satisfaction with oral exams; however, no appropriate tool was found. For this reason the Satisfaction with Simulation Experience Scale (SSES) (Levet-Jones et al., 2011), which had evidence of psychometric integrity, was adapted for use in this study. It was titled Satisfaction with Post-practicum Oral Clinical Reasoning Exam Scale (SPPOCREs) (see Table 3.3).

**Table 3.2** The marking rubric for the PPOCRE

<i>Consider the situation</i>
The student identified the highest priority patient from the information provided in the verbal handover
The student explained why this patient is priority
<i>Collect cues/information</i>
The student identified accurate cues to be collected and how this would be undertaken using a systematic approach
The student identified the priority body system that was the focus of the assessment and why this body system is a priority
<i>Process information</i>
The student discussed how they would analyse data and distinguish normal from abnormal findings
The student distinguished relevant from irrelevant information
The student applied pathophysiological knowledge and linked abnormal findings to actual or potential patient problems
The student predicted a potential adverse outcome that may occur if the appropriate action was not taken
<i>Identify problem</i>
The student identified the patient's priority problem/s
The student provided an accurate nursing diagnosis by relating the main patient problem to aetiology and supporting evidence
<i>Establish goals</i>
The student described a priority goal related to the nursing diagnosis identified, the desired outcome and time frame
<i>Take action</i>
The student outlined three nursing actions that should be taken in order to address the patient's problem (nursing diagnosis) and to achieve the specified goal, each supported with clear rationales
<i>Evaluation of outcomes</i>
The student described how the effectiveness of the nursing actions would be evaluated
<i>Reflection</i>
The student discussed what they had learned from preparing for and participating in the oral exam
The student described two clinical strengths and two areas for future improvement
The student identified two strategies that would be taken to address identified areas for improvement

The 14 SPPOCREs items were scored using a five-point Likert scale with response ranges from 1 (strongly disagree) to 5 (strongly agree). These types of rating scales allow for measurement of direction and intensity in relation to participants' opinions, beliefs, attitudes and perceptions. The SPPOCREs also includes one open-ended question to elicit learner's overall perspectives of the oral exam. Quantitative data from the SPPOCREs was statistically analysed using the Statistical Package for Social Sciences statistical software package version 22.0 for Windows (IBM Corp, 2013); and an interpretive inductive approach was used to analyse the qualitative data from the open-ended question (Sandelowski & Barroso, 2007).



**Table 3.3** SPPOCRES scores

Items	Strongly disagree	Disagree	Unsure	Agree	Strongly agree	Mean
1. The educator made me feel comfortable and at ease during the oral assessment	16	20	23	60	65	3.38
2. I was able to use what I learned from my clinical placement in the oral assessment	23	37	25	66	33	2.86
3. The oral assessment allowed me to demonstrate my knowledge about patient care	16	38	30	62	38	2.88
4. The oral assessment helped me to recognise my strengths and weaknesses in terms of problem-solving	11	25	13	78	57	3.58
5. The oral assessment helped me to recognise my strengths and weaknesses in terms of prioritising and planning patient care	13	24	21	82	44	3.31
6. The oral assessment caused me to reflect upon my clinical reasoning ability	10	19	17	83	55	3.56
7. The educator’s questions during the oral assessment helped me to learn	17	36	27	59	45	2.99
8. I believed I performed better in the post-practicum oral assessment than I would have had I undertaken it prior to my clinical placement	14	37	59	36	38	2.29
9. I will be able to use what I learned from the oral assessment in my future practice	14	23	22	80	45	3.29
10. The educator provided constructive feedback following the oral assessment	21	38	29	55	39	2.81
11. The oral assessment was a valuable form of assessment	39	27	22	39	57	2.90
12. The oral assessment was an appropriate way to assess my clinical reasoning ability	30	29	31	47	46	2.77
13. The oral assessment was a fair way of assessing my clinical reasoning ability	34	36	23	46	43	2.77
14. I preferred the oral assessment rather than a written assessment item for assessing clinical reasoning	43	24	22	21	74	2.96

Ethical approval was sought and obtained from the university ethics committee (ethics approval number, H-2016-0342) prior to advertising the evaluation study.

An announcement and a participant information statement were posted on an electronic learning management system (Blackboard™). While undertaking the PPOCRE was mandatory, participation in the research project was voluntary and anonymous, and only students who provided written informed consent were included. On completion of the oral exam, students were provided with a copy of the SPPOCREs, and they were asked to return it to a submission box in another section of the building. Data were collected between July and November 2016.

### ***3.4.1 Evaluation Results***

In the following section, participants' demographic characteristics are described, followed by student performance results and lastly student satisfaction results.

**Participants** A total of 471 students completed the oral exam, and 181 students completed the SPPOCREs, giving a response rate of 38%. The majority (91%) of participants were female, and 63% were currently or previously employed in the healthcare industry, mainly as assistants in nursing, diploma-qualified enrolled nurses or healthcare assistants.

**Student Performance** The PPOCRE was worth 30 marks. The mean mark achieved for the assessment item was 20.36 and the median was 20 (SD 4.46). Twenty-eight students achieved a mark of less than 15 and received a fail grade for their initial attempt.

Analysis of areas of strength and weakness revealed that although most students were able to identify the highest priority patient, the rationales given for their decision varied considerably. Many students supported their decision by listing abnormal signs and symptoms, and while this was not incorrect, few students were able to link the signs and symptoms to the cardiac issue that was of primary concern. Overall students' knowledge of pathophysiology was not strong. For example, many students were able to cluster cues together (e.g. increased respiratory rate as a result of decreased SpO<sub>2</sub> or increased heart rate to compensate for hypotension) but were unable to explain the trigger for the deterioration (i.e. why was SpO<sub>2</sub> decreased or heart rate increased) and the underlying pathophysiology.

Students' ability to identify and analyse appropriate cues also varied. For example, while most students said: 'I'd do a comprehensive A to G assessment' (airway, breathing, circulation, disability, exposure, fluids, glucose level), few specified the details of this assessment, the cues they would collect or that an ECG was imperative. A few students overlooked cue collection (i.e. the second stage of the clinical reasoning cycle) completely and went directly to the nursing action stage of the clinical reasoning cycle without being able to provide a rationale for their decision. Although most students were able to reiterate the patient's medical diagnosis, the

provision of a nursing diagnosis was more challenging, and a number of students struggled with using correct terminology when identifying a priority problem. Following on from the nursing diagnosis, students' ability to identify appropriate nursing actions was also variable. While most realised the patient's condition was deteriorating, few recognised that a rapid response was required.

Overall, these results provide insights into many of the students' poor performance in the PPOCRE. Some had an obvious knowledge deficit about the health-care conditions of the patients profiled in the exam and the related pathophysiology. Other students had a limited ability to use higher-order cognitive skills to analyse and synthesise the patient information, or to predict potential adverse outcomes, which are each key components of the clinical reasoning process. One of the key benefits of the PPOCRE was that it provided educators with in-depth insights, not only about students' knowledge and skill deficits but more importantly the thinking that underpinned their decision-making. One educator stated that the PPOCRE 'let me see *why* students were making mistakes as opposed to a written assignment where you get no understanding of why students come to a particular decision'.

### Student Perceptions – Quantitative Results

The mean SPPOCRE score (determined by averaging the 14 items) was 3.03 out of a maximum of 5 indicating a moderate level of participant satisfaction with the oral exam. Table 3.3 lists the scores for students' degree of agreement with each of the 14 SPPOCRE items. The variable satisfaction scores for many of the items indicate that students' views about aspects of the PPOCRE tended to be quite polarised.

The three highest SPPOCRE scores were for:

- Item 1:** *The educator made me feel comfortable and at ease during the oral assessment* (M 3.38).
- Item 4:** *The oral assessment helped me to recognise my strengths and weaknesses in terms of problem-solving* (M 3.58).
- Item 6:** *The oral assessment caused me to reflect upon my clinical reasoning ability* (M 3.56).

The three lowest SPPOCRE scores were for:

- Item 8:** *I believed I performed better in the post-practicum oral assessment than I would have had I undertaken it prior to my clinical placement* (M 2.29).
- Item 12:** *The oral assessment was an appropriate way to assess my clinical reasoning ability* (M 2.77).
- Item 13:** *The oral assessment was a fair way of assessing my clinical reasoning ability* (M 2.77).

## Student Perceptions – Qualitative Results

When conducting the qualitative analysis, we began by repeatedly reading participants' responses in order to develop a general understanding of the data. This was followed by a detailed interpretation to discover emergent and recurring ideas and underlying meanings. The data were then categorised into overarching themes (Sandelowski & Barroso, 2007). Three main themes that emerged from the thematic analysis were 'Better than written assessment items', 'Authenticity of the approach' and 'The need for better preparation'. Participant quotes supporting each of these themes are provided below.

### 3.4.2 *Better than Written Assessment Items*

Notwithstanding the variable responses to the SPPOCRES items, students articulated a number of positive features of the PPOCRE in response to the open-ended question. Foremost was the individualised and seemingly informal exam approach that allowed them to interact with the assessor and ask questions when they were unclear. A number of students expressed a preference for an oral exam over a written assessment item, suggesting that the oral exam provided the opportunity to explain their thinking and rationales for care provision. Students also valued the immediacy of the feedback provided and the prompts received from assessors throughout the exam process. Students' perceptions about why they preferred the PPOCRE are illustrated in the quotes below:

- *I liked that it was face-to-face and individualised.*
- *It was good being able to interact with the assessor.*
- *It was clearer than written assessment items as we could ask the assessor questions.*
- *It took a lot less time than a written assessment item and there was no need for references!*
- *I was able to talk about my clinical reasoning and provide justification for my answers.*
- *Feedback was immediately provided so we knew exactly how we were going.*

### Authenticity of the Approach

The authenticity of the patient scenarios was a recurring theme in the students' responses, with a number commenting that the PPOCRE allowed them to demonstrate relevant nursing skills such as the ability to prioritise patient care. Some students felt that because the oral exam was conducted following their clinical placement, it provided the opportunity for them to apply what they had learned from practice:

- *The patient scenarios were realistic and authentic.*
- *The oral assessment allowed me to carefully think about and prioritise patient care just like I would on the job.*
- *I was able to demonstrate my knowledge and understanding of the patient situations.*
- *The oral exam made you think and reflect.*
- *Undertaking the assessment item after my clinical placement allowed for practical application of what I had learned.*

### **The Need for Better Preparation**

A recurring theme was the need for better explanation and preparation activities prior to the PPOCRE. Some students felt that the information provided was inadequate and the marking rubric lacking in clarity. Students also provided suggestions for how the assessment item could be improved, for example, by provision of more information about each of the patients in the scenarios prior to the exam and access to the image of the clinical reasoning model during the exam. A number of students also felt that the 30-minute time allocation was inadequate for the type of assessment:

- *A clearer and more detailed assessment description was needed to give us an idea of what to expect.*
- *More information was needed about each of the patients and should have been provided before the assessment.*
- *There should have been something like a clinical handover provided before the day of the exam to help us prepare.*
- *A cheat sheet with the clinical reasoning cycle included would have helped us to structure our thinking during the exam.*
- *I needed more time to think through each answer properly.*

## **3.5 Discussion and Limitations**

The PPOCRE was a novel assessment approach that challenged students to demonstrate their clinical reasoning skills, explain their thinking and justify how they would prioritise patient care needs. This approach provides some advantages to written assessment items and exams, particularly for assessment of cognitive skills. However, students' results and the variable SPPOCRE scores suggest that improvement in a number of key aspects of the PPOCRE is required.

It appeared from the qualitative SPPOCRE data that, although most students were satisfied with their assessor, there was nevertheless a degree of variability in the quality, clarity and amount of feedback provided by the assessors. Standardisation and inter-rater reliability are critical for all types of assessments. Greater attention to ensuring equity in the execution of the PPOCRE will therefore be needed in

future iterations, along with the provision of more training and moderation opportunities for assessors.

SPPOCREs feedback suggested that many students felt ill-prepared for the PPOCRE, a perception that was perhaps exacerbated by the fact that this was the first time students had encountered an oral exam. In addition to the provision of in-class and online instructions, it is evident that students also need opportunities to practise and rehearse these types of oral clinical reasoning assessments. Learning to ‘think aloud’ can be challenging, even for experienced clinicians (Bucknall, 2000). Consequently, for students to learn to perform well in an oral exam, they need multiple opportunities for deliberate practice along with the provision of feedback on performance.

Positioning the PPOCRE as a post-practicum activity was designed to enhance application of learning from clinical placements. The degree to which this eventuated is difficult to ascertain from the variable student feedback data. However, anecdotal feedback from both students and educators suggested that, while clinical reasoning is regularly addressed in on-campus teaching and learning activities, formal and ‘just in time’ informal opportunities for students to ‘think aloud’ while on clinical placements could be advantageous to their learning and preparation for the PPOCRE. This approach would provide clinical educators with diagnostic information about students’ cognitive skills and ability to prioritise patient care. Additionally, these types of clinical learning activities would allow students to rehearse their thinking about patient care, with the provision of immediate feedback and correction of any misconceptions about practice issues.

One of the key advantages to the PPOCRE identified by the educators was that it gave them a deeper appreciation of students’ clinical reasoning skills and cognitive processing ability than they would normally gain from marking a written assignment. Understanding the thinking that underpins students’ decision-making as well as their strengths and weaknesses in clinical reasoning is valuable and can provide educators with guidance for designing future teaching, learning and assessment activities.

### **3.5.1** *Limitations*

While the study outlined in this chapter makes an important contribution to the nursing literature, there are some limitations that must be considered. A proportion of the participants had previous experiences working in healthcare which may have influenced the results. Therefore, generalisability cannot be assumed. Additionally, it was not possible to correlate the results with students’ previous academic or clinical performance, so the extent to which these factors impacted the results cannot be determined. Further, internal consistency reliability of the SPPOCREs was not determined in this study. As instrument development is an iterative process, future studies in different contexts and with different cohorts would provide evidence of this scale’s psychometric integrity. Lastly, further research to determine the long-term impact of the PPOCRE experience on students’ future performance is required.

### 3.6 Conclusion

The implementation and the evaluation of the PPOCRE, as described in this chapter, provides insights into some of the benefits, challenges, advantages, and disadvantages of oral post-practicum clinical reasoning exams. Without doubt, assessment of clinical reasoning is not an easy undertaking. However, given the impact of clinical reasoning on patient outcomes, it is imperative. We hope that this chapter will encourage educators to challenge the status quo and take risks when designing innovative post-practicum clinical reasoning assessment activities.

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