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Time-constrained scenario-based practical examinations (TSPEs): an alternative to OSCEs?

Emily J. Hall MA VetMB PGCAP MRSB MRCVS FHEA

Alison Simpson RVN TAQA FHEA

Heather Imrie BVetMed PhD PGHE MRCVS FHEA

Nicola Ruedisueli RVN PGCHE FHEA CertVNRT PGDip Veterinary Education

School of Animal, Rural and Environmental Science, Nottingham Trent University, Brackenhurst, Southwell, Nottinghamshire, NG25 0QF, UK

Emily J. Hall MA VetMB PGCAP MRSB MRCVS FHEA

Emily J. Hall MA VetMB PGCAP MRSB MRCVS FHEA. Emily qualified as a veterinary surgeon in 2007 and has worked in small animal first opinion practice ever since. Emily now course leads the BSc (top-up) in Veterinary Nursing Science and teaches veterinary nursing students on both the FdSc and BSc courses at Nottingham Trent University. Emily continues to work in small animal first opinion practice at weekends.
Email: Emily.hall@ntu.ac.uk

Alison Simpson RVN TAQA FHEA

Alison Simpson RVN TAQA FHEA. Alison qualified as a veterinary nurse in 1994, working in small animal practice before moving into veterinary nursing education. Alison has also worked for the National Blood Service and examined for the RCVS. She joined Nottingham Trent University in 2008 as Veterinary Nursing Centre Manager, responsible for overseeing practical skills teaching and assessment.

ABSTRACT: Assessing clinical competence in medical professionals typically involves both work-based assessment and simulated clinical examinations. Student veterinary nurses are assessed through the Nursing Progress Log during placement, then by means of practical examinations – objective structured clinical examinations (OSCEs). Time-constrained scenario-based practical examinations (TSPEs) are adapted from traditional OSCEs, including assessment of similar practical skills, but by means of a single patient scenario. This article introduces the theory behind using TSPEs and covers practical considerations for course teams considering adopting this assessment style.

Key words: OSCEs; TSPEs; practical examination

Introduction

The question of how to assess clinical competency is one that challenges all medical professions. Objective structured clinical examinations (OSCEs) were introduced in medical education to assess surgical skills in an attempt to assess students' clinical ability, rather than just testing their factual knowledge (Cuschieri, Gleeson, Harden, & Wood, 1979). OSCEs have been described as examinations where "students demonstrate their competence under a variety of simulated conditions" (Watson, Stimpson, Topping, & Porock, 2002). OSCEs typically include a range of practical or clinical tasks, performed within a set time limit and are assessed by a suitably qualified examiner.

Human medical professionals have an important advantage over veterinary educators as they can use actual patients in their examinations. Medical actors can be used to simulate patient interactions, with scripts so that each student faces exactly the same scenario, ensuring each student has the same assessment experience. Whilst animals are sometimes used in the assessment of physical examination skills, assessors need to ensure there is consistency throughout the assessment so that later students are not disadvantaged by patients becoming fatigued. More importantly, they also need to ensure the welfare of the animals being used in the exam. Not many cats will tolerate repeated physical examinations and no animal should be subjected to unnecessary procedures

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Figure 1. A rabbit feeding tube practical station, with stuffed rabbit toy as a simulation patient.

simply for an educational assessment, so in veterinary education we are often reliant on animal models (Figure 1).

The issues with OSCEs

One of the common complaints regarding OSCEs is that they lack realism: "OSCE's are simulations of the real world, but they are not the real world" (Downing & Haladyna, 2004). Standing over a stuffed toy with an examiner watching over you with their clipboard is stressful and unrealistic. Performing a series of unrelated tasks in isolation can lead some students to see the assessment as simply a hurdle to be overcome, rather than linking it to their professional practice and skills development (Nicol & Freeth, 1998). This can lead to students attempting to memorise the 'steps' to each practical task, rather than understanding why tasks are performed in a specific way. This is a form of surface learning (Biggs, John, & Tang, 2011) associated with decreased performance in assessments and ultimately poor learning outcomes, which has the potential to negatively impact professional performance in practice (Trigwell & Prosser, 1991).

Leung et al. (2008) demonstrated that the style of assessment can influence how human nursing students prepare for their examinations and how they structure their learning. When faced with scenario-based examination questions, students recognised the need for critical thinking and a deeper level of understanding, so used a deeper learning approach to ensure they were prepared for the assessment (Leung, Mok, & Wong, 2008). This study explored student perceptions of preparing for multiple choice question assessments, so may not be directly relatable to preparing for OSCE style assessments. However, the findings mirror those reported in other disciplines such as education, using case-based essay examinations (Segers, Martens, & Van den Bossche, 2008), suggesting that the benefits of using scenario or case-based assessments are more widely applicable.

Human nursing programmes have therefore adapted traditional OSCE style assessments to include "scenario based OSCEs" where one or two longer stations include elements of patient care centred around a specific scenario (Rushforth, 2007). The use of a scenario to link the different stations together was developed to reflect a more holistic approach to patient care, allowing a more comprehensive assessment of student nursing skills (Major, 2005). Best practice guidelines for human nursing OSCEs include the requirement for students to perform tasks in an integrated, more authentic manner with a focus on delivering safe patient care (Nulty, Mitchell, Jeffrey, Henderson, & Groves, 2011). Whilst such guidelines are currently lacking for veterinary nursing OSCE assessments, they have been rigorously evaluated across a range of human nursing programmes in Australia with students valuing the realistic nature of the scenarios, and assessors seeing improved consideration of holistic patient care as a result of their adoption (Mitchell et al., 2015).

Heather Imrie BVetMed PhD PGHE MRCVS FHEA

Heather Imrie BVetMed PhD PGHE MRCVS FHEA. Heather qualified as a veterinary surgeon in 1989. Having spent some time in mixed practice she undertook a PhD at the University of Nottingham and then spent time working as a post-doctoral research assistant with an interest in immunology. She became a lecturer at Nottingham Trent University in 2013, working as a lecturer as part of the Veterinary Nursing team.

Nicola Ruedisueli RVN PGCHE FHEA CertVNRT PGDip Veterinary Education

Nicola Ruedisueli RVN PGCHE FHEA CertVNRT PGDip Veterinary Education. Nikki began her veterinary nursing career at Liverpool University Small Animal Hospital. She worked in both private and referral practice, then moved to Mars UK providing nutritional technical advice to veterinary professionals. Nikki moved to Nottingham Trent University in 2007 establishing and course leading the FdSc in Veterinary Nursing. She still works in a small animal hospital at weekends.

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How are TSPEs different?

Time-constrained scenario-based practical examination (TSPEs) have been developed to assess one long OSCE station based on a single patient (Hall and Simpson, 2018). The practical tasks are ordered to reflect what might happen to the patient in practice and all tasks are relevant to the scenario being assessed. Rather than having a fixed time limit for each task (often around six to ten minutes), students have an overall time limit in which to complete the scenario (typically around 60–65 minutes). This requires time management and planning; students can spend as long as they like on any task, but there is the risk of running out of time, and therefore not completing enough tasks to pass the assessment. Having an overall time limit encourages students to become aware of how long tasks take. Time management is an important part of professional practice, so developing this awareness as a student can be beneficial for both placement periods and professional practice beyond graduation.

The tasks must be set up in a specific order, with clear signposting between tasks to ensure students follow the correct order. Prior to commencing the examination, students are given their assessment brief to allow them to familiarise themselves with the patient's signalment, clinical diagnosis, and subsequent treatment plan. The examination script includes a hospitalisation form which must be completed prior to leaving each station, assessing compliance with clinical record keeping, recording usage of controlled drugs and appropriate labelling of laboratory samples.

Since the examination is scenario-based, students can be tested on clinical decision-making skills alongside their practical nursing skills. For example, a patient presenting in dyspnoea might require an oxygen kennel to be prepared rather than a standard kennel. The same patient could require intermittent positive pressure ventilation during anaesthesia, so an appropriate anaesthetic circuit should be selected to enable this to be performed.

TSPEs in action

TSPE style assessments have been used at the authors' institution since 2013. Student veterinary nurses undertake three TSPEs, one in each year of their foundation degree course. They are prepared for the assessment style through formative mock examinations at every stage of their course and have access to video tutorials of the key practical skills throughout their training.

When writing a TSPE scenario, it is important to have a clear set of learning outcomes to be assessed within the examination. Blueprinting is one way to ensure a practical examination is fit for purpose (Hamdy, 2006). Blueprinting requires the course team to decide the purpose of the assessment and the clinical skills to be assessed. In terms of practical assessments and TSPEs, this requires careful consideration of how each practical station assesses aspects of the RCVS Day One Skills for Veterinary Nurses (RCVS, 2016) outlined in Figure 2, ensuring that all 10 sections are thoroughly assessed. Another consideration when writing a TSPE, is the type of scenario to be used in the assessment. The scenario must enable a suitable range of practical skills to be tested, at an appropriate level for the student. If students are to be assessed on their practical skills at each stage of their course, the scenarios must allow progression of task difficulty to reflect the higher academic level being assessed. Some considerations and scenario examples are shown in Figure 3.

Prior to starting the examination, students have ten minutes to read their examination booklet. This contains a brief history and signalment of the patient, then lists the ten

Section 1 – Legislation affecting practice
- Abide by health and safety regulations
- Follow standard operating procedures

Section 2 – Communication
- Create accurate and legible written communications
- Complete appropriate paperwork for diagnostic services

Section 3 – Handling and restraint
- Wear appropriate personal protective equipment
- Use appropriate restraint methods for patients

Section 4 – Nursing care
- Perform clinical examinations
- Provide husbandry to animals
- Apply dressings

Section 5 – Laboratory techniques
- Carry out haematological analysis
- Carry out urinalysis
- Use a microscope

Section 6 – Diagnostic imaging
- Position a patient to obtain a diagnostic quality image

Section 7 – Dispensing
- Maintain appropriate records
- Ensure safe handling of pharmaceuticals in accordance with legislation

Section 8 – Infection control
- Dispose of hazardous waste
- Carry out effective barrier nursing

Section 9 – Theatre practice
- Check and clean surgical instruments
- Package instruments for sterilisation
- Prepare the surgical site appropriately

Section 10 – Anaesthesia
- Prepare for anaesthesia
- Assess the patient's anaesthetic risks

Figure 2. Sections of the RCVS day one skills for veterinary nurses that must be mapped into a TSPE blueprint.

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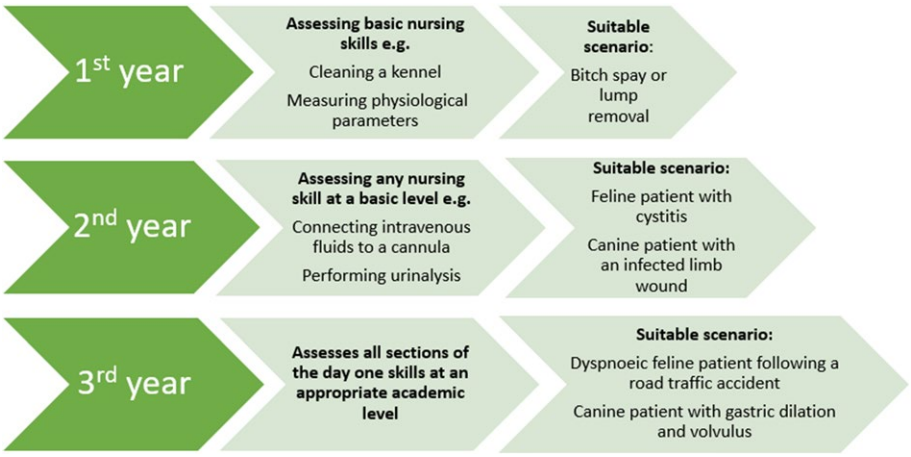

Figure 3. Examples of scenarios for TSPEs when assessing students on a yearly basis over a three-year course period.

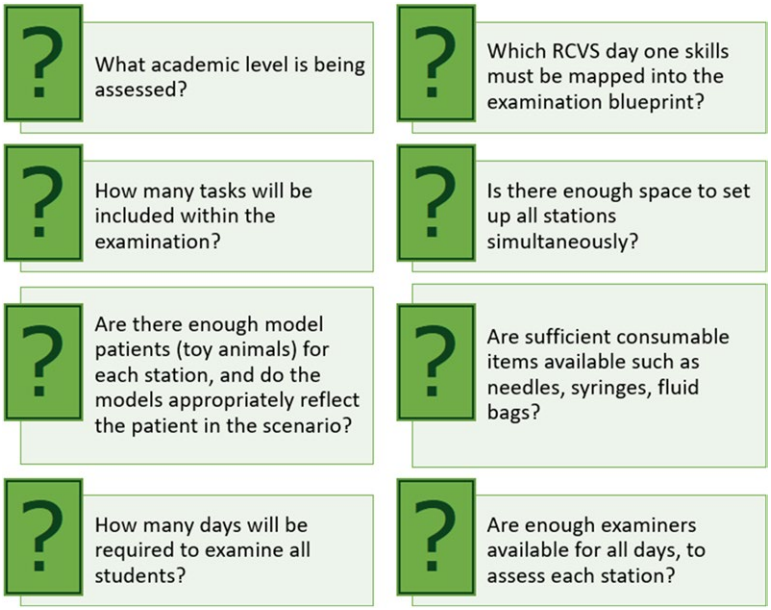

Figure 4. Planning considerations for TSPEs.

stations in order. At the end of the examination booklet is a hospital chart for the patient, where key information must be recorded at each relevant station. Once the student commences the assessment, they have no contact with other students until they have left the examination area. Sitting in the holding room between stations and having to wait before starting different stations were identified as sources of anxiety for students taking OSCE assessments in one recent study (Dunne, Moffett, Loughran, Duggan, & Campion, 2018). In a TSPE, once a student has started their assessment there is rarely any waiting between tasks, and no time to dwell on previous performance. Students move onto the next station as soon as they have finished their current task. Students may need to be paused if they catch up to the previous student or should a comfort stop be required, but mostly they follow the scenario continuously in a fixed order exactly as they would follow a patient through a series of procedures in practice. The assessment is complete once a student has finished all tasks, or once the time limit has elapsed.

Practical implications of running TSPEs

Both OSCEs and TSPEs are resource heavy, not only in consumable equipment required for the assessment, but also staffing levels to plan, write and then run the assessment. A great deal of time is required to thoroughly plan and prepare for any TSPE (Figure 4). TSPEs will potentially take longer than OSCEs as the candidates start at station one and progress through to their final station in a fixed order. This necessitates a staggered start, usually every 10–15 minutes to allow the previous candidate to have moved on at least one station before the next student begins. In our experience it takes around 11 hours to examine 40 candidates, so typically requires running group examinations across at least two days.

Each station must have its own examiner (RCVS, 2018). Stations take on average six minutes, but this can vary depending on the complexity of the station. Ideally each station would be observed by two examiners for quality assurance purposes. If this is not possible, one alternative is to video record each student to provide a permanent record of their performance in the event of an appeal. A senior examiner and assistant are also required. The senior examiner performs quality assurance observations, moderates the candidates' exam papers and deals with any queries which may arise. The assistant helps with the smooth running of the exam, welcoming candidates and collecting the exam papers. Therefore, twelve examiners in total are required for the duration of the assessment for a ten station TSPE using video recording.

The preparation for the TSPE is also time intensive. Examiners need to be recruited, trained and standardised on the stations. Sufficient room space must be available to set up all stations simultaneously, with a holding room for students waiting to start their assessment. Rooms need to be available prior to the exams to set up the stations. This can be a lengthy process taking several hours as ideally at least two examiners run through the full assessment to ensure all equipment is provided and accessible.

As the stations replicate tasks which may occur in industry, equipment and consumables are required to emulate this. For example, the fluid therapy station is consumable heavy as it requires a new bag of intravenous fluids and a giving set for each candidate as well as syringes and needles at a cost of approximately £5 per candidate. The cost of this may be negligible for one or two candidates but requires careful consideration when there are 40 students taking an examination. For clinical tasks such as administering a medication, managing a urinary catheter or administering food via a nasogastric feeding tube, suitable simulation patients (typically stuffed toys) must be available for the species being examined. For instance, if the scenario is a feline patient, a toy cat (preferably of the same size and colour) must be available for every station

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that requires the presence of a 'patient'" If that patient has a urinary catheter placed, this will need to be present on every model on every subsequent station, until the urinary catheter would reasonably be removed.

Conclusion

Simulated clinical and practical skills assessments are imperfect. The artificial nature of the situation, the lack of actual animal patients and the formality of being observed and assessed by an examiner add up to an unrealistic, stressful assessment environment which can negatively impact student performance. The use of a scenario-based assessment allows decision making skills to be assessed in a more realistic manner and better reflects holistic patient care, compared to unrelated individual task based OSCEs. Institutions considering adopting this assessment style should be aware of the additional equipment, room space, examiner and time requirements of designing and implementing such an assessment.

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ORCID

Emily J. Hall http://orcid.org/0000-0002-9978-8736
Alison Simpson http://orcid.org/0000-0002-3164-6379
Heather Imrie http://orcid.org/0000-0001-5214-3706
Nicola Ruedisueli http://orcid.org/0000-0002-5114-0068

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