



# Assessing competence in developing professionals: implementing a new Portfolio-based assessment system at the School of Veterinary medicine

Jim Anderson, Zamantha Marshall, Andy Bell and Jennifer Hammond





## Intended learning outcomes

- Outline the rationale for adoption of a Portfolio based assessment process in a Professional degree programme
- Explain how a Portfolio can be used as a mechanism to assess clinical and professional skills development.
- Summarise the key advantages and disadvantages of using a Portfolio based approach to summative assessment



## What is competence?

“the ability to perform the roles and tasks required by one’s job to the expected standard”

Competence will...

“vary with experience and responsibility and take into account the need to keep up to date with changes in practice”.

Royal College of Veterinary Surgeons 2014

The biggest issue is assessing, in particular behaviours and attitudes



## Glasgow BVMS Programme

- 5 year Professional Programme
- Triple accredited (AVMA, RCVS & EAEVE)
  - Competency based
- New Curriculum introduced in 2013

Foundation  
phase

Years 1 & 2

Clinical phase

Years 3 & 4

Professional phase

Year 5



## Outcome based curriculum design

- Start at the end and work back
- Programme and course intended learning outcomes designed to provide “Day 1 competencies” and evidence of achievement
- Teaching & assessment aligned with these intended learning outcomes
- Some outcomes present a challenge: *“Demonstrate that they recognise personal and professional limits, and know how to seek professional advice, assistance and support when necessary.”* (RCVS 13, 2014)

**Constructive alignment**



## Assessment in BVMS Programme

### Competence (B)

- Objective structured clinical examinations (OSCE)
- Professional Portfolio
  - Directly Observed Procedural Skills (DOPS)
  - Cause for Concern system

### Knowledge & application (A)

- Written and computer based assessment
- Various formats
- Continuous assessment tasks (CATS)



## What is a Portfolio?

- A collection of evidence of both the products and processes of learning.
- A vehicle for students to demonstrate that they have developed and achieved specific intended learning outcomes (ILO's)

Home Page Professional Phase Research Publication (3,8,8,11) Equine Veterinary Report (1,4,8,8) ECC Case Report (3,6,7,10)

American Fondouk Reflection (1,2,4,8,7,8,10) Radiography Interpretation (3,8,8) Sudden Death Case Report (2,3) Pathology Interpretation Presentation (3,8,9)

Clinical Audit (4,7,11) Flock Health Plan (1,2) Extra Mural Studies (1,2,3,4,7) +

by REAGAN CARMWATH (REAGAN.CARMWATH - 0805638c)

Reagan Carmwath - 0805638c

Reagan Home Page

My BVMS Phases of Development

Professional Page

Welcome to My ePortfolio

I am passionate about animal welfare, wildlife, herbal medicine and Scotland.

I am a founding member of a vet school charity, Students for Animals in Need, which provides funding for life saving procedures for animals that would otherwise not benefit from medical care.

I am the Student Welfare Representative (2012-2013), a role in which I raised awareness and space for discussion about animal and student welfare.

I am a dog keeper, horse breeder and member of British Drivers for Multiple Limb Rescue.

I look to be outdoors with my mongrel Patch.

I believe that all beings should be cared for and strive to bring medical care to those animals most in need.

For my final year I chose Tier 1 Production Animal and Tier 2 Working Equine. I chose these specialties as I am passionate about pursuing a career in mixed practice. As I have more experience in small animal practice, being employed in a University hospital, I desired to broaden the experience in both production animal and equine work. I chose to engage in the working equine experience as I believe it is a very worthwhile proposition in providing care for animals requiring it. On a personal level, I gained a huge amount from this experience and developed many practical skills and social awareness of veterinary work in a different cultural setting. Tier 1 Production Animal taught me to evaluate farm medicine in terms of herd health. I had the opportunity to produce herd health plans and evaluate the role of the veterinary professional as a farm animal adviser.

Additional Links

My Curriculum Vitae

EMS Record

EMS CERTIFICATE

DOPS CERTIFICATE

RCVS Log



## Why use a Portfolio?

- Longitudinal approach
- Assessment for learning: reflection on learning built in
- Mechanism to prevent progression if key competencies not achieved behaviours demonstrated
- Way to assess outcomes which are not suitable for written tests
- Flexible
- Growing evidence base from other Professional contexts
- Consistent with lifelong learning (Professional development phase & reaccreditation)



# **Clinical skills development**

## **Foundation phase (BVMS 1 and 2)**



## DOPS In the Foundation Phase

- Direct Observation of Procedural Skills
- Critical skills assessment of 5 areas
- Expectations are made clear
- Excellent/Competent/Not yet Competent
- Progression prevented without successful completion
- **Certificate of completion to be included in Portfolio**



## FP4 – Canine Handling

Student  Date  Assessor

Please grade each of the areas using S (satisfactory), N/A (not applicable) or NS (not satisfactory). Your assessment should reflect what you would reasonably expect of a veterinary undergraduate student progressing from foundation to clinical phase. Any NS skills should be indicated in the comments box along with other feedback

S	N/A	NS	Examination	Notes	Feedback	
			Appropriate clothing	Eg. Clean scrubs, sensible footwear, hair tied back		
			Correctly obtains a femoral pulse rate	Identifies site of femoral artery (medial aspect of thigh) Places at least 2 fingers flat over site of artery Uses clock or watch to time counting Calculates correct pulse rate (beats/min)		
			Restrain dog for access to a jugular vein	Large dog: Straddles dog and grips shoulders between knees, Uses one or both hands to gently hold muzzle Small dog: Stands to side of dog + uses one hand to steady forelimbs Uses one hand to gently hold muzzle Ensures collar is raised up towards chin using fingers (if applicable) Raises head slightly to give access to jugular vein		
			Restrain for access to cephalic vein and raise the vein	Straddles or stands to the side of the dog Places one arm around neck or a hand under the chin to gently restrain head Selects correct vein to raise – should be the opposite limb to the side of the dog they are standing (not applicable if straddling the dog) Cups elbow in palm of their hand and raises limb off floor Places thumb across the limb just below the elbow crease to occlude vein Rotates their thumb outwards to straighten the vessel		
S	NS	Demonstrates compassion, care and due respect to animal and owner		S	NS	Observe and adhere to relevant regulations regarding health and safety

Overall Outcome:  Excellent  Competent  Needs further development

Feedback

## Why are DOPS used in Foundation Phase?

- Competent and safe for clinical environment
- Assessment of skills not suitable for OSCEs
- Personal responsibility of skill development
- Exposure to OSCE environment
- Consequences of failure





## DOPS and Moodle

- Assessment criteria available
- Scheduling and recording results
- Development of electronic tablets
- Recorded feedback





## DOPS Educational Impact

- Longitudinal development of skills
- Learning to be receptive to criticism and feedback
- Identifying areas of weakness
- Improved OSCE results?





## Clinical skills development Professional phase (BVMS 5)





## DOPS In the Professional Phase

- Practical skills assessment @ level of RCVS day-1 competencies
- Each rotation has a pool of 6-10 DOPS
- Need to pass a minimum of 2 DOPS per core rotation
- 12 DOPS total
- Certificate of completion to be included in Portfolio



- Sampling approach means not all students complete all DOPS
- Each student allocated 2 DOPS randomly during rotation
- Standard setting due to
  - Training of assessors
  - Small pool of assessors
  - Criteria clear on form

Student  Rotation  Species

Description of Procedure/case

Please grade each of the areas using S (satisfactory), N/A (not applicable) or NS (not satisfactory). Your assessment should reflect what you would reasonably expect of a 'day one' veterinary graduate. Any NS skills should be indicated in the comments box along with other feedback

S	N/A	NS	Examination	Notes
			Checks anaesthesia/analgesia status	Checks that anaesthesia and analgesia has been performed and is adequate before commencing procedure as required
			Places surgical drapes	Uses correct 4 drape or fenestrated drape technique depending on availability. NOTE May be omitted for cat castrate
			Surgical incision at appropriate site and length	Scrotal or pre-scrotal (as appropriate for species) incision through skin, fascia +/- parietal vaginal tunic (open or closed castration) Exteriorises testicle and strips fat & fascia from testicle using swab if appropriate.
			Ligates testicular artery/vein and vas deferens AND removes testicles	Effective haemostasis applied to testes as appropriate to species. Ligates (encircling, transfixing, autoligate) as appropriate for species, technique and size. Places clamps proximal to spermiform plexus if necessary ligating proximal to these, and incise to remove testicle. Checks for bleeding before releasing ligated cord. Repeats the procedure on the other side.
			Checks surgical site	Before closing wound checks surgical site for bleeding and controls with appropriate technique
			Closes incision	This section may be omitted for cats. Closes layers (parietal tunic for semi-closed technique), fascia and s/c layer + skin Uses appropriate suture patterns and material (size dependent on animal). Places secure knots (total number of throws dependent on material). Apposes tissue layers with tension on sutures suitable to allow good healing (i.e. not too tight/loose). Uses intradermal skin sutures if appropriate for the situation and species. Closes inguinal ring if appropriate for species.
			Cleans operating site	Disposes of sharps and waste correctly.
			Adheres to basic principles of surgery and asepsis	Applies basic principles of instrument and tissue handling, haemostasis etc. Maintains asepsis or manages compromise of sterility appropriately. Holds instruments with appropriate grip
			Comprehensive notes	Writes notes of procedure in an appropriate location which are in sufficient detail to enable a full understanding of the procedure and materials used at a later time.
			Demonstrates compassion, care and due respect to animal and owner	
			Observe and adhere to relevant regulations regarding health and safety	

Overall Outcome:  Excellent  Competent  Needs further development

Feedback

Assessor:

Signed:

Date:



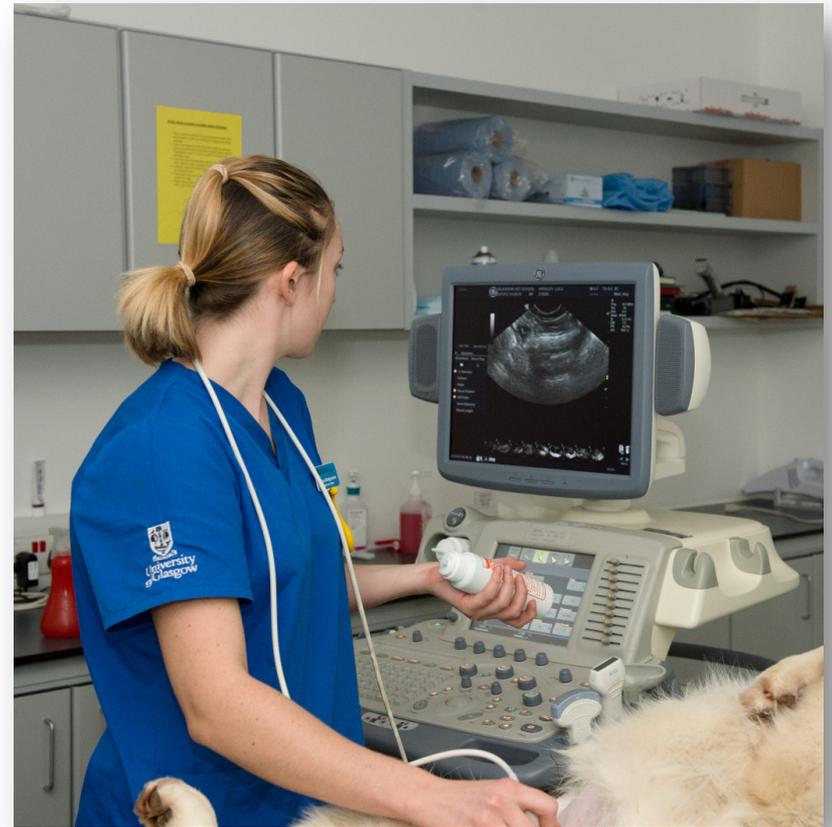
## DOPS integration in clinics

- A DOPS attempt during clinical time results from
  - Staff providing ample opportunities to complete assessments
  - Students volunteering themselves for assessment
- DOPS can be graded as Excellent/Competent/Not yet Competent
- Written feedback follows all attempts
- Students are allowed a reasonable number of repeat attempts



## DOPS Educational Impact

- High validity instrument as real clinical material is used
- Feedback is central to successful implementation as it promotes assessment for learning
- Encourage a deep approach to learning in a clinical context





## Our experiences with DOPS implementation

### Foundation

- Drives a desire for feedback
- Time commitment of staff
- Consistency of assessment
- Live animal component

### Professional

- The students seem to appreciate the validity of the assessment and the chance for feedback
- Students worry overly about achieving a 'not yet competent' as they see this as failing



# Professional skills development All years BVMS programme



## 3 Principles of the portfolio

- **Collection**

- Students are encouraged to use their Portfolio to **collect evidence of their learning - assets**

- **Connection**

- The process of compiling a Portfolio for assessment requires the student to **make connections** between the evidence which they have collected and the **intended learning outcomes** of the course/programme

- **Reflection**

- Reflection is a process in which individuals carefully consider their experiences, allowing them to **learn from the experience**, often by understanding what happened in a **different way**



## Cause for concern

- Failure to meet expected standards in relation to: academic/clinical skills progress or professional behaviour
- Evidence required in Portfolio of remediation
- Aims to address “failure to fail” issues of clinical rotations

explanations for this phenomenon: (1) students in the clinical years are not seen in a continuum by one group of evaluators<sup>5</sup>; (2) individual clerkships do not take “ownership” of the professionalism competency realm; (3) transient interactions with faculty and housestaff are the norm as students have several short rotations at several locations<sup>6</sup>; (4) evaluation of professionalism is perceived as subjective—negative evaluations may be particularly likely to result in grievance procedures and other adversarial student responses; and (5) strategies to evaluate professional and unprofessional behaviors in medical school are not available.



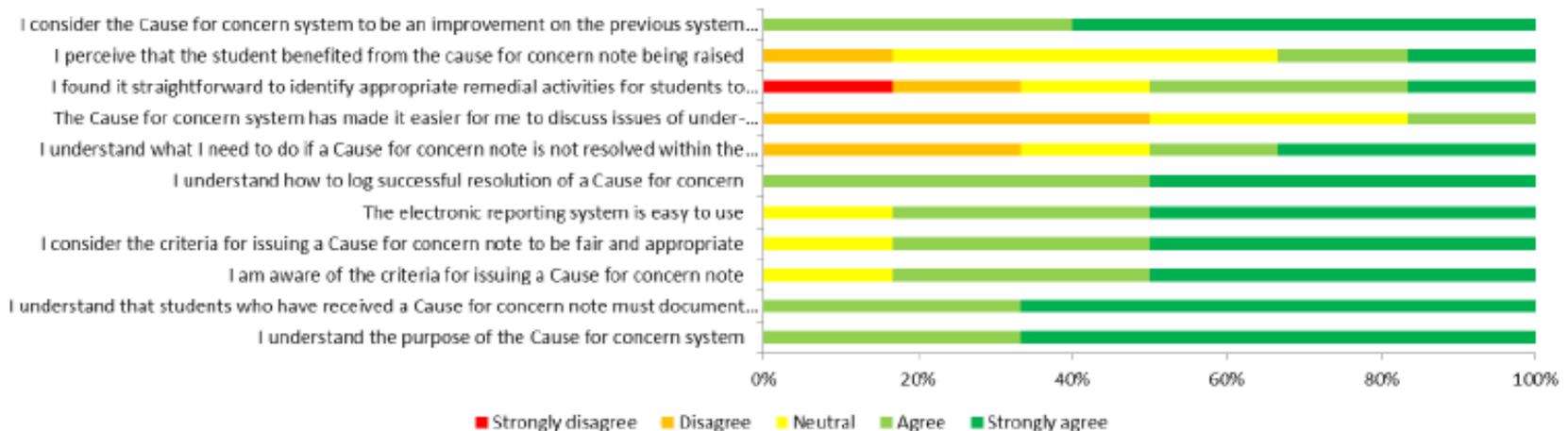
*Maxine A. Papadakis, MD, Emilie H. S. Osborn, Molly Cooke, Kathleen Healy, and the University of California, San Francisco School of Medicine Clinical Clerkships Operation Committee*

## **A Strategy for the Detection and Evaluation of Unprofessional Behavior in Medical Students**

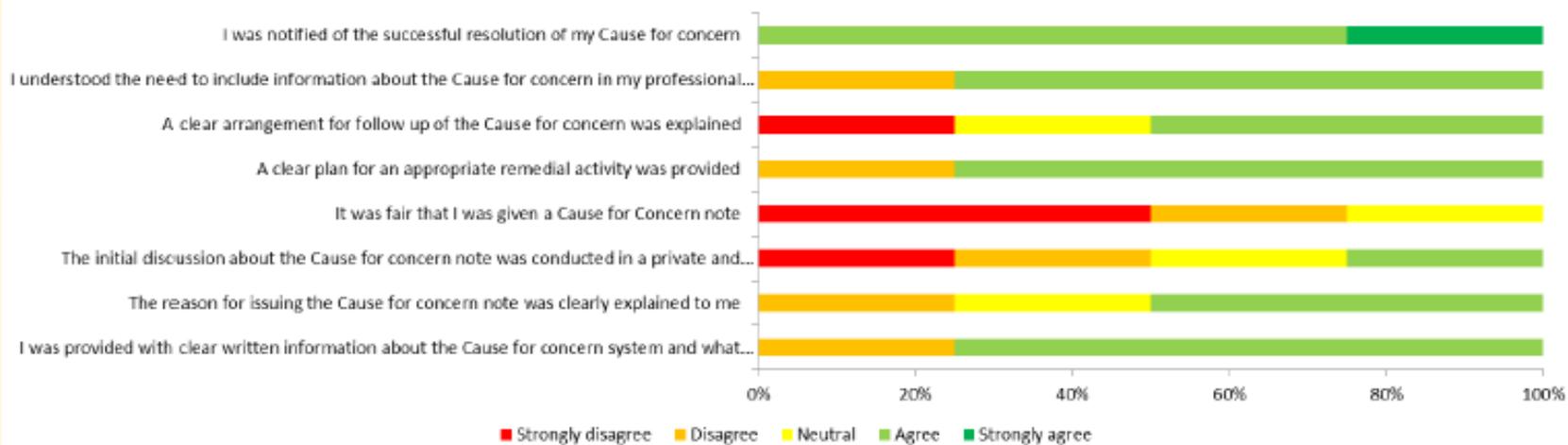
*Acad. Med. 1999;74:980-990.*



### Cause for concern - staff evaluation



### Cause for concern - student evaluation





## Outcomes of 1<sup>st</sup> session of CFCs

- Introduced into Foundation phase
  - Minor causes for concern
  - Overload resources more automated. Formalises non-compliance with organisation
  - Chronic low grade issues
  - By Professional phase more significant
- Areas for development
  - Increased support for student understanding
    - **Communication of process**
  - Fairness (victimisation)
  - Fitness to Practice and Appeals
  - Consistency of application
  - Stress
  - Staff perceiving inviting extra work!
    - **Cf failure to fail where failing also seen to create extra work**
  - Appropriate remedial actions
  - Final year
- Pattern (seeing CFCs) reassuring



## Portfolio assessment process

- Anonymity not possible
- Scrutineering by administrator
- High stakes: Double marked
- Low stakes: Marked and 10% second marked
- Team of Portfolio assessors
- Calibration portfolios
- 20-60 min per Portfolio
- **All borderline and failing Portfolios are considered and outcome agreed by the group**
  
- **Team of 6 for approximately 4½ days + ½ roundup**



## Impacts & Challenges of Portfolio assessment

- New skills required: reflection & working Mahara
  - Staff and students
- Drives feedback culture
  - Workload issue - not always easy to keep up! (NSS)
- Avoiding the tick box mentality (while making expectations clear)
- Managing student disability
- Ability to export and access after graduation
- Workload (students & staff)
- Excellent window into student experiences of the curriculum

## Any questions or comments?





## An example from last year

- [Thanks to Mairi](#)

## SCHEDULE B

All Courses		Primary verbal descriptors for attainment of Intended Learning Outcomes relating to professional or clinical skills	Honours Class	BDS, BVMS, M
Primary Grade	Aggregation Scores			
A	5	Exemplary and polished demonstration of the required skill(s), displaying underpinning knowledge, sound judgement and appropriate professional values, as evidenced by focussed sensitivity to the context, the needs of any subject, and the wider implications of the candidate's actions	First	Honours
B	4	Efficient and confident demonstration of the required skill(s), displaying underpinning knowledge, sound judgement and appropriate professional values, as evidenced by an evident appreciation of the possible implications of the candidate's actions, demonstrating initiative and flexibility of approach	Upper Second	Commenda
C	3	Clear demonstration of attainment of the required skill(s), displaying underpinning knowledge, good judgement and appropriate professional values, as evidenced by familiarity with how to proceed in a range of contexts	Lower Second	Pass
D	2	Adequate independent performance of required skill, displaying underpinning knowledge, adequate judgement and appropriate professional values, suitable to routine contexts	Third	
E	1	Presently inadequate independent performance of the required skill. Knowledge, judgement and professional values are at least sufficient to indicate an awareness of personal limitations	Fail	Fail
F	0	Not presently capable of independent performance of the required skill, lacking self-awareness of limitations, and prone to errors of judgement and faulty practice		

CR	CREDIT REFUSED	Failure to comply, in the absence of good cause, with the published requirements of the course or programme; and/or a serious breach of regulations
----	----------------	---



## Support

- Student designed-templates provided as a starting point
- Introduction and Mahara training in BVMS1 & 4
- Module/Rotation staff: feedback on individual assignments
- Portfolio drop in sessions
- Mentors only responsible for EMS advice and pastoral support (consistency)
- Portfolio adviser sessions (timetabled, one per year BVMS 5)



## Factors for Portfolio success

<b>Factor</b>	<b>Recommendation</b>
Goals	Clearly introduce the goals of working with a portfolio Combine goals (learning and assessment)
Introducing the portfolio	Provide clear guidelines about the procedure, the format and the content Be cautious for problems with information technology
Mentoring/interaction	Provide mentoring by teachers, trainers, supervisors or peers
Assessment	Use assessment panels of 2–3 assessors depending on the stakes of the assessment Train assessors Use holistic scoring rubrics (global performance descriptors)
Portfolio format	Use a hands-on introduction with a briefing on the portfolio's purpose and the procedures Keep the portfolio format flexible Avoid being overly prescriptive about the portfolio content Avoid too much paperwork
Position in the curriculum	Integrate the portfolio into other educational activities in the curriculum



## Holistic Portfolio assessment using a rubric

- Checklist first
- Criteria (all score 0-3)
  - Logical and coherent structure
  - Level of critical reflection
  - Level of skills development
  - Use of documentary evidence
  - Use of relevant literature
- Weighting

A	No zero score and sum 13-15
B	No zero score and sum 10-12
C	No zero score and sum 7-9
D	No zero score and sum 5-6
E & BELOW	A zero score in any one component means that the Portfolio fails. Scores in the remaining elements determine the grade E (1-2 zeros), F (3-4 zeros) or G (all zeros)



## Holistic assessment

- Easy to get bogged down in detail
- Remember the process is one of categorisation
- Which description best fits the Portfolio in front of you?
- Reliability comes from calibration and collaboration



# Competency assessment

*“The portfolios seem to be a very powerful indicator of the student's professional abilities. The standard of these portfolios, given the limited time for preparation, was commendably high.”*

The screenshot shows a student's ePortfolio page for the 'American Fondouk Reflection' assignment. The page is titled 'My BVMS Phases of Development' and 'Professional Page'. It features a profile picture of the student, Reagan Carnwath, holding a small animal. The page includes a 'Welcome to My ePortfolio' section with a bio, 'Additional Links' such as 'My Curriculum Vitae', 'EMS Record', 'EMS CERTIFICATE', 'DOPS CERTIFICATE', and 'RCVS Log', and a 'Documentary Evidence' section with links for 'Case Log', 'Case Log', 'Asset', 'Reflection', and 'Feedback Form'. The 'Asset' section contains a video titled 'Tier 1 Selective-Working Equidae' and a 'Brief Description' of the student's experience at the American Fondouk in Paoli, Missouri. The 'Intended Learning Outcomes Satisfied' section lists the student's reflections on their learning outcomes. The page also includes a 'Feedback Form' and a 'Rabid Donkey' section with images.