LIVE Teaching Development Fund 2009

Final report on the development and evaluation of a veterinary dental teaching and assessment model

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In 2009, a successful application was made for funding to develop and evaluate a veterinary dental teaching and assessment model. The aim of this project was to develop and evaluate a basic veterinary dental teaching station within the Clinical Skills Centre at the RVC, with supporting teaching materials online, to facilitate the teaching, learning and assessment of basic dental skills for veterinary nursing and veterinary medicine students. The opportunity to acquire basic knowledge, understanding and skills in a safe environment was anticipated to boost student's confidence whilst on EMS / placements and increase their clinical involvement with dental procedures prior to qualification.

Specific objectives outlined for this project included the creation of a skills station with:

- A range of basic hand held dental instruments for handling and identification

- A dental scaler/polisher

- A basic dental model to practice scaling, polishing, periodontal probing and simple dental charting

It was proposed that the station would be used to teach

- Care, maintenance and set up of dental equipment

- Instrument use and handling

- Safe practice (i.e. Health and safety and infection control precautions)

In addition it was also proposed that we would

- Develop online teaching materials, which could be accessed off site as well as onsite, relating to basic practical veterinary dental skills

- Promote student assisted learning and undergraduate interprofessional collaboration

- Develop assessment materials, in a variety of formative and summative formats, to test knowledge and understanding as well as basic practical dental skills

- Evaluate student opinion on the usefulness of the skill station, student assisted learning and undergraduate interprofessional collaboration by questionnaire

The majority of these objectives have been met. During the first phase of the project development, the necessary equipment and materials were purchased and production of the static, visual teaching materials began.

These included clinical skills sheets and information sheets. Over the past year, the second phase of project development has involved production of a number of short video clips detailing set up of a dental machine and how to scale and polish teeth using the simulator model. These have been made accessible to students via Blackboard since the start of the 2011-2012 academic year. As the students are unable to practise periodontal probing and simple dental charting on the ceramic tile model, a commercially produced dental model was sourced and additional skill sheets written to assist students learning these skills.

A study was conducted with third year veterinary students to validate the dental simulator model as a tool for learning a new skill (dental scale and polish) by determining technical skill and perception. The outcomes of learning to perform a dental scale and polish using the prototype model or a video were compared. The results revealed that following training, those students who learnt to scale and polish using the model scored significantly higher in an objective structured clinical examination than those who had access to a training video alone.

Questionnaires were also completed by the students to evaluate attitudes towards the use of a dental model in learning dentistry-related skills. All students identified the model as a potentially valuable learning tool to supplement existing teaching methods and facilitate the acquisition of small animal dentistry skills.

This study has emphasised that our simple, inexpensive model has proven effectiveness at facilitating the acquisition of basic veterinary dental skills. Whilst there remains a need for traditional instruction methods, a dental model is a useful adjunct for the acquisition of foundation level veterinary dental skills including scaling and polishing, use of dental instrumentation and manual dexterity. The students identified several areas for development and modification of the model and suggested that it should be available to all students in the third year of the BVetMed course.

The results of this study have been written up, presented and defended as part of a successful MSc in Veterinary Education project. In addition, a manuscript has been prepared and submitted to the Journal of Veterinary Medical Education for peer review and hopefully publication and a poster abstract has been submitted for consideration for the 2012 AAVMC annual conference. The skills sheets, tutor's teaching notes and instructions for making the model will be made available to others online, enabling veterinary and veterinary nursing students around the world to benefit from a validated training tool for learning the important skills necessary for performing a dental scale and polish.

One part of the project which so far has not been delivered is the promise of interprofessional learning. This is in part due to the differing timetables of the BVetMed and Veterinary Nursing students. The integration of simulator training into both curricula requires the provision of explicit learning outcomes. Instructor feedback is also important to ensure that students utilise the model effectively and master the specified learning objectives. The need for an instructor presents additional challenges in time and cost and could potentially limit access to, and use of, the model. This may be overcome by developing peer assisted learning; not only would this increase access and opportunity but could also introduce interprofessional teaching and learning.

Although a small scale study, our veterinary dental model facilitated the acquisition of scale and polish skills and the students involved appreciated its value as a training tool. If training sessions could be incorporated into

the curricula prior to clinical placements and rotations, it is anticipated that students would be better prepared to assist with the technique on live animals, which would in turn lead to enhanced student confidence and more rapid skills acquisition.

In conclusion, during this project we have successfully developed and validated a simple, inexpensive model as a tool for effectively facilitating the acquisition of basic veterinary dental skills. A number of learning resources and assessment materials have been devised and we have considered how and when these could be integrated into the BVetMed curriculum alongside scheduled veterinary dental teaching sessions. Our ongoing aim is to promote student assisted learning and further develop undergraduate interprofessional collaboration through the use of this model and the veterinary dental teaching station. Finally we thank the LIVE Centre for the help and support which has allowed us to deliver the above outcomes.