Practice Makes Perfect: Compressing a Decade into a Day Using Computer Gaming to Learn Johne's Disease Control Program Design

M.T. Collins[1], *DVM, PhD;* **J. McDonald[2],** *DVM, PhD;* **E.A. Horn[2],** *BA;* **C.K. Worrell[2],** *BFA;* **B. Longoria[3];* **J. Cheetam[3],** *PhD*

[1]*Department of Pathobiological Sciences, School of Veterinary Medicine, University of Wisconsin, Madison, WI 53706*

[2]*Technology for Learning Center, School of Veterinary Medicine, University of Wisconsin, Madison, WI 53706*

[3]*Division of Information Technology, Academic Technology, University of Wisconsin, Madison, WI 53706*

Introduction

Johne's disease (JD) control in dairy herds requires changes in herd management in combination with routine use of diagnostic tests and specific actions on test results. Outcomes of JD control programs, i.e. changes in prevalence, take at least five or more years to be seen on farms. Thus, it takes many years before bovine practitioners personally experience the success or failure of JD control programs in their clients' herds - a long learning cycle. Computer simulations allow for gaining clinical experience on virtual farms before tackling JD control in reality. Gaming concepts challenge learners to attain a passing score or improve their score by repeated attempts; in effect, trying to model expert behavior.

Materials and Methods

A JD control simulation game, JD-Consult, was created with five dairy farms each with a different management style, business goal or JD prevalence. The game challenges students newly hired into a multi-person practice specializing in dairy cattle to explore a farm, listen to the producer, and select from among a variety of JD control management changes, diagnostic tests, and actions on test results. Information about management changes and JD tests are available at optimal points throughout the game. Moo U Library is a constant resource of published journal articles for additional information. After submitting recommendations for each farm, the "Boss" in the game critiques the learner's actions and recommendations and assigns a score (20 points per farm, deducting two points for a hint, if used). Each farm also has "The Boss's Opinion" where the student is told what recommendations the "expert" would make and, more importantly, the thought processes behind that recommendation. JD-Consult was tested on second-year veterinary students at the UW-SVM. These students had had only one lecture on JD up to that point in their DVM curriculum. Eighty students were invited to play the game and complete an online evaluation form comprised of 38 items plus the option for open-ended comments. Forty students completed the game and evaluation during October and November, 2009. Responses to most questions were on a 7-level Likert scale; 1 = strongly disagree to 7 = strongly agree, with 4 = neutral. The evaluation procedure had UW-Madison Institutional Review Board (IRB) approval.

Results

Of the possible 100 points (five farms x 20 points per farm) students scored an average of 53 points the first time they played the game (range 66 to 88). The game requires a score of 90 points to become a partner in the practice. Among 120 self-reported observations, the students required an average of 18 minutes to complete each farm. The following evaluation results are reported as agreement with the evaluation statement, i.e. >4 on the Likert scale. Students reported: 60% enjoyed the game; 78% learned from the "Boss"; 67% improved as they progressed through the farms; 74% agreed that they were given sufficient explanation for their farm score; 82% agreed that the Boss's feedback made sense relative to their recommendations; 83% agreed that the game helped them learn about JD control; 93% agreed that the game was an effective teaching/learning tool. Student comments and experience with technical facets of the game allowed for improvements to be made before providing the game to the general bovine practitioner community.

Significance

The JD-Consult game is a novel and useful tool for modeling expert behavior and helping practitioners gain clinical experience with JD control in a virtual farm setting. Similar simulation games can be designed on the same basic game platform. This teaching tool is now available on the UW-SVM CE website http://www.vetmedce.org/ and can be used to obtain veterinary CE credit.