Clinical Journal Club for Vet Techs

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Introduction

Veterinary Technicians play a vital role in the daily care of their patients. Veterinary Technicians and Nurses able to better find, retrieve, and evaluate the literature will be an important asset to any practice that puts a high premium on utilizing the best evidence and implementing it.

One of the best ways for veterinary technicians to develop these skills is to have a regular journal club. A journal club is an excellent way to develop and better understand clinical issues when they arise and find the best way to address them. The most exciting aspect of a journal club is the clinical realization of the technician's research and evaluation of the literature.

Methods

Forming a journal club will require generating interest and meeting regularly. Frequency of meeting can be monthly or weekly. The more frequent the meetings, the more topics can be covered. Having posters that post the time and location is often effective. Something visually attractive often helps. Below are examples of images made for journal club meetings utilizing Microsoft Word Templates and Public Domain images modified with GIMP (open source image manipulator - www.gimp.org) or Adobe Photoshop (Images A,B, and C).

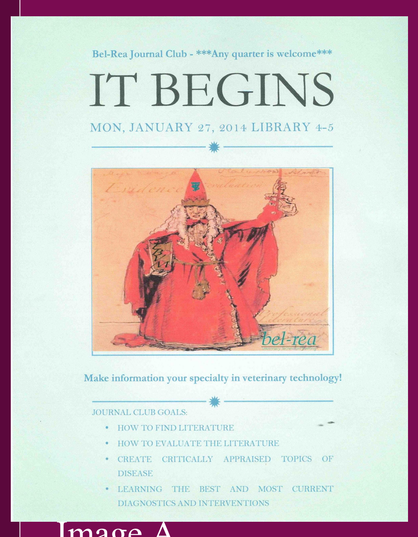

Image A

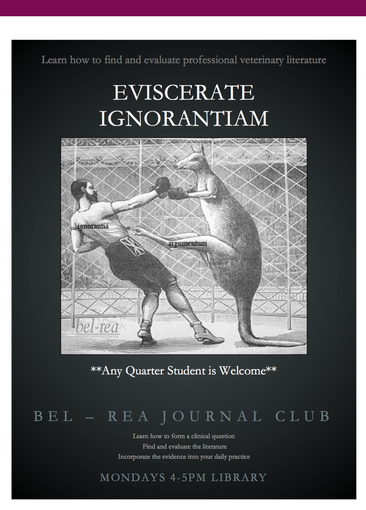

Image B

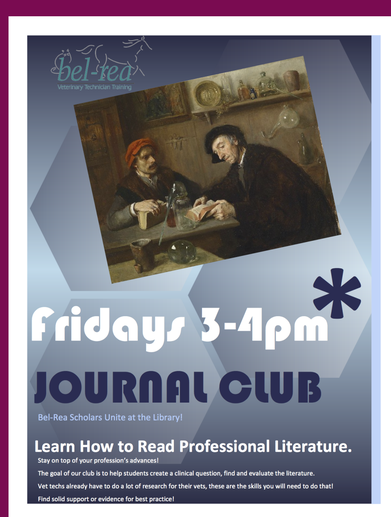

Image C

Once gathered as a group, clinical questions that have arisen can be addressed by the group. These questions can be addressed in the following 5 phases:

1) Bring up an area of clinical interest and answer background questions with textbooks and authoritative websites[1].
2) Develop a foreground question after answering background information of the disease. This foreground question should be specific to the clinic and the club can develop a question using Patient, Intervention, Comparison, and Outcome (PICO) methodology[1]. Individuals will then utilize databases like CABI, PubMed, VetsRev, Agricola, and Google Scholar to find the literature[2-6]. The individual will have to work with terminology and Boolean to develop a good search and keep track of their search methodology by filling out the beginning of the modified *BestBets* Template (See Document 1)[7,8].
3) Articles found will be discussed and located by group effort. Once the articles are located and retrieved, journal club members will complete the BestBETS template and include an Arlt score sheet, or modified version (see document 2)[7,9].
4) The group will then discuss their articles and make a summary clinical report or recommendation, utilizing the BestBETS template.
5) Group will edit and finalize clinical report for practice.

LOE

Level 1: Systematic Review, Metaanalysis, peer-review CAT
Level 2: RCT, Cohort Study
Level 3: Case series
Level 4: Case Reports
Level 5: ex vivo or in vitro study
Level 6: Expert opinion
Level 7: Research involving other species.
Level 8: google search

Figure One: Levels of Evidence[10,11].

Table 2: commonly used statistical tests in research[12].

Parametric Test	Example of equivalent non-parametric test	Purpose of Test
T-test - Two Sample (unpaired) test	Mann-Whitney U Test	Compares two independent samples drawn from the same population
One sample (paired) test	Wilcoxon Matched pair's test	Compares two sets of observation on a single sample (tests the hypothesis that the mean difference between two measurements is zero)
F- test (one way analysis using total sum of squares)	Kruskall Wallis test	similar to the *t* test where three or more observations are made on a single sample
two way analysis of variance	two way analysis of variance by ranks	as above, but tests the interaction of two different co-variates
no direct equivalent	X^2 test	Tests the null hypothesis that the proportions estimated from the paired sample are the same.
No direct equivalent	McNemar's test	tests the null hypothesis that the proportions estimated from a paired sample are the same
Parson's *r*	Spearman's rank correlation coefficient	assesses the strength of te straight line association between two continuous variables
Regression by least squares method	No direct equivalent	describes numerical relation between two quantitative variables, allowing one value to be predicted from another
Multiple regression by least squares method	no direct equivalent	describes the numerical relation between a dependent variable and several predictor variables (co-variates)

Results

Tools for assessing literature can be very helpful in developing the research skills of a veterinary technician. Basic criteria for evaluation of literature is provided as a template with documents 1 and 2 (feel free to take copies). Document 1 is based on the BestBETS template and journal club format provided by John E. Rush. Document 2 is based on Sebastian Arlt's article with our own modification to place a higher value on sample size due to the high rate of underpowered studies in veterinary medicine[9,13,14].
Figure 1 represents the hierarchical value of evidence used by the journal club[10,11]. Table 1 is a summary of the statistical tests that readers should typically see in a study[12]. If none of them are used, what did they use and why? Finally, with the final clinical recommendation, a recommendation level is assigned based on the recommendation levels used in RECOVER[11].

This methodology has been applied with success for a year at Bel-Rea Institute of Animal Technology. Research the club performs can directly inform what is done in the school's Pre-clinical settings where the students get their first hands-on clinical experience. Currently, the journal club at Bel-rea has made two clinical recommendations on incision evaluation and pain management/scoring that has directly been utilized in the pre-clinical environment of students monitoring and caring for animals after routine spays and neuters.

Document 1

Best Bets for Vets Template for Bel-Rea Journal Club

Clinical Scenario - what are we addressing, be as specific as possible.

3-part question - in [patient with particular disease] does the use of [intervention with control] cause [improvement of clinical outcome].

In does the use of
cause
Literature search - 2 sets of search terms are used with one of each database.

Database	Keywords and boolean	# articles retrieved	Article title found

Evidence: evaluation of evidence potentially utilizing LOE and Arlt with overview based on our paper guidelines.

Document 2

Modified Arlt Scoring System

1. **Is the study:**	
Metaanalysis, Systematic Review, CAT	50 points
RCT, Cohort	30 points
Case Report, series	20 points
Expert Opinion	10 points

2. **If Metaanalysis, Systematic Review, or CAT:**	
Literature search is exhaustive	20 points
The included trials were comparable from a clinical point of view	40 points
Trials of a high quality (blinded, randomized, controlled) were included	20 points
Results were objectively discussed that included publication bias and overall bias of studies	20 points

3. **If RCT or Cohort:**	
Essential information regarding animal species, housing, breed,etc… are included.	10 points
Trial is composed of adequate control or comparison group	30 points
Trial is randomized	10 points
Trial is blinded	10 points
Adequate statistical test is mentioned and all variables are documented.	10 points
Results are discussed critically	10 points
Bibliography is current and extensive	10 points

4. **If Case study or series:**	
Essential information regarding the breed, species and animal information is provided	20 points
Examinations and interventions are described in detail	20 points
Results are discussed critically	20 points
Bibliography is current and extensive	10 points

5. **If expert opinion:**	
Results are discussed critically	10 points
Bibliography is extensive and up to date	10 points

6. **Total # of animals in study (sample size):** _____points

Total Relative Arlt Score _____points

Conclusions

Forming a journal club in a clinical environment can be intensely rewarding and better inform the entire practice. The results of self-directed learning in the journal club can be applied in a number of ways: informing clinical practice, topics for abstract submission at conferences, or just overall improvement of knowledge regarding any number of topics. Technicians that utilize journal clubs will also find themselves better prepared to help the veterinarian answer their clinical questions. Technicians in a journal club will already have a good idea of how to ask good clinical questions and find high quality relevant evidence.

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