Critical appraisal – Randomised controlled trial questions – Bednarek et al, 2013

Introduction	
Are the aims clearly stated?	Yes The aim was to determine the effect of florfenicol and flunixin meglumine administered in combined form on the clinical status and changes of selected cellular immune indices in calves affected with naturally occurring BRD compared to animals treated with antibiotics alone.
Methods	
Is the study design suitable for the aims?	Yes
Which population was studied?	90 Black and White Lowland breed dairy calves of mean body weight 147 +6.5 kg, aged between 2 and 4 months showing typical clinical signs of BRD (fever over 40°C, cough, with a nasal discharge from mucoid, mucopurulent to purulent, dyspnea, anorexia and lethargy). 45 calves given florfenicol and flunixin meglumine and 45 calves give florfenicol alone
Were the treatments randomly allocated? If yes, how was the randomisation done?	Yes Not stated
Were the groups comparable prior to intervention?	No data given, all calves met inclusion criteria
Was the person who administered the interventions blinded?	Not stated
Is it clear what measurements were carried out in	Clinical Illness Index Score (CIIS) – body temperature, respiratory rate, nasal discharge,

the study?	coughing, dyspnea, appetite, depress and mortality WBC counts, CD2, CD4, CD8, WC4, Immunophenotyping
Were the correct measurements chosen? Do they reflect (or are they strongly related to) the outcome of interest?	Yes Yes
Were previously established validated methods used to make the measurements? (e.g. Glasgow pain score, International Units etc)	The scoring system is subjective and has been used before but it is unclear if it has been fully validated.
What outcomes were measured?	Clinical Illness Index Score (CIIS) – body temperature, respiratory rate, nasal discharge, coughing, dyspnea, appetite, depress and mortality WBC counts, CD2, CD4, CD8, WC4, Immunophenotyping
Are the outcomes clinically relevant?	Yes
Were the outcomes assessed blind?	Not stated
Are the statistical methods described?	Yes, very briefly
Was the statistical significance level stated?	No
Was the sample size justified?	No
Was ethical approval obtained?	Not stated

Are the methods described in enough detail that you could repeat them?	Yes
Results	
Were the basic data adequately described?	No
Do the numbers add up? Are all subjects accounted for?	Total numbers not given in the results for each piece of data provided.
Was the statistical significance (p value) stated in the results? Is this consistent with the methods? (It should be stated in the sample size or power calculation)	Yes Not stated in the methods
Were any side effects of the intervention reported if applicable?	No
What were the main findings/key results?	The group treated with florfenicol and flunixin meglumine had significantly lower CIIS scores on day 2 and 3 ($p<0.05$) compared with the group treated with florfenicol alone. By day 5 the CIIS scores in the florfenicol and flunixin meglumine group were lower than the florfenicol only group but this was not significant. The immunological markers were significantly lower in the florfenicol and flunixin meglumine group compared to the florfenicol alone group.
Discussion and conclusion	
What do the main findings/key results mean?	Flunixin may improve the clinical status of calves with pneumonia, notably in the first 2-3 days

	following administration.
Are the negative findings discussed? How are the negative findings interpreted?	Yes
Does the discussion reflect the results?	Yes
Interpretation	
What are the clinical implications of this study? Are the subjects in the study similar to those in the BET/your own?	Flunixin may improve the clinical status of calves with pneumonia particularly in the first 3 days. Yes
General	
Who funded this study?	Not stated