

Critical appraisal – Randomised controlled trial questions – Wilson et al 2015

Introduction	
Are the aims clearly stated?	Yes The objective of this experiment was to evaluate the effects of 3 of the most common ancillary therapies used in combination with an antimicrobial on the performance, health, and immune response variables of newly received high-risk calves treated for clinical BRD.
Methods	
Is the study design suitable for the aims?	Yes
Which population was studied?	320 Calves (bodyweight 217 +/- 20kg) split into 4 groups: Antibiotics and flunixin (N=80), Antibiotics and intranasal vaccine (N=80), Antibiotics and vitamin C (N=80), Antibiotics alone (N=80) Beef research center, Oklahoma State University
Were the treatments randomly allocated?	Yes
If yes, how was the randomisation done?	No
Were the groups comparable prior to intervention?	All had subjective clinical signs of BRD (score of 1 or 2) and rectal temperature of over 40°C Body weight were not different between groups at the start of treatment Limited data given
Was the person who administered the interventions blinded?	Not stated
Is it clear what measurements were carried out in	Rectal temperature

the study?	<p>Clinical Severity Score</p> <p>Body weight</p> <p>Average daily weight gain</p> <p>Re-treatment with antibiotics</p> <p>Removal from the group</p> <p>Finishing performance</p>
Were the correct measurements chosen?	Yes
Do they reflect (or are they strongly related to) the outcome of interest?	Yes
Were previously established validated methods used to make the measurements? (e.g. Glasgow pain score, International Units etc)	<p>Yes for body weight.</p> <p>Subjective clinical score that has been used before (DART, Step et al), unclear how much validation done.</p>
What outcomes were measured?	<p>Rectal temperature</p> <p>Clinical Severity Score</p> <p>Body weight</p> <p>Average daily weight gain</p> <p>Re-treatment with antibiotics</p> <p>Removals/Mortalities from the group</p> <p>Finishing performance</p>
Are the outcomes clinically relevant?	Yes
Were the outcomes assessed blind?	Yes
Are the statistical methods described?	Yes

Was the statistical significance level stated?	Yes
Was the sample size justified?	No
Was ethical approval obtained?	Yes, by the Oklahoma State University Institutional Animal Care and Use Committee (Animal Care and Use Protocol AG-12-11).
Are the methods described in enough detail that you could repeat them?	Yes but they are complex with many measurements made
Results	
Were the basic data adequately described?	Not in enough detail to be able to repeat the basic analysis
Do the numbers add up? Are all subjects accounted for?	It is not clear in all parts of the results if all 320 calves are still in the analysis
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 Yes
Were any side effects of the intervention reported if applicable?	No
What were the main findings/key results?	At the time of the 2 nd antimicrobial treatment the antibiotic only treatment group had a significantly lower (better) clinical score than the group receiving flunixin (P<0.01). At the time of the 3 rd treatment, calves

	<p>receiving antibiotics only had significantly lower (better) clinical severity scores than calves in the other 3 groups($P < 0.01$).</p> <p>By the 3rd antimicrobial treatment those on antibiotics only were significantly heavier than those receiving any ancillary treatment ($P=0.01$, the antibiotics only group lost 0.13kg/d whereas the other groups lost 12.54kg/d)</p> <p>Average daily gain was significantly more in the antibiotics only group compared to the groups receiving ancillary treatments ($P<0.01$)</p> <p>No significant difference in mortality or removals between groups</p> <p>No significant difference in performance or efficiency parameters between groups</p> <p>No significant difference in finishing performance between groups.</p>
Discussion and conclusion	
What do the main findings/key results mean?	Ancillary treatments, including flunixin, to antibiotics may not improve clinical recovery or performance indicators in calves with BRD.
<p>Are the negative findings discussed?</p> <p>How are the negative findings interpreted?</p>	<p>Yes</p> <p>With surprise! And that flunixin possibly only helps to reduce temperature and there are no other potential benefits to treatment in terms of clinical disease and performance indicators.</p>
Does the discussion reflect the results?	Yes
Interpretation	
What are the clinical implications of this study?	<p>Flunixin may have limited benefits to calves with respiratory disease.</p> <p>The way in which these animals are housed is very</p>

Are the subjects in the study similar to those in the BET/your own?	different from beef calves in the UK.
General	
Who funded this study?	Not stated