

## SUPPLEMENTARY MATERIAL 2

# A systematic review and network meta-analysis of injectable antibiotic treatment options for naturally occurring swine respiratory disease

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The citation searches began on October 5, 2017 and searching for new studies was completed on November 30, 2017 after all relevant studies had been identified and their bibliographies assessed. The Cambridge Agricultural and Biological Index search conducted is reported in Table S1. The search strategy was not peer-reviewed. Instead, we verified that 4 studies identified as likely to be relevant to the review were captured by the search. The Swine Information Library has an interface that makes Boolean searches difficult. Therefore, to identify relevant manuscripts, the webpage “find” function was used to search for titles that included the single word terms “treat”, “trial”, “efficacy”, and the titles and abstracts with those terms evaluated for evidence. Those considered relevant were manually entered into a RIS file

format. The New Animal Drug Application (NADA) and Abbreviated NADA (ANADA) numbers searched were as follows: NADA 97-505, NADA 111-636, NADA 113-232, NADA 140-338, NADA 140-890, NADA 141-209, NADA 141-235, NADA 141-244, NADA 141-264, NADA 141-288, NADA 141-328, NADA 141-334, ANADA 200-066, ANADA 200-154, ANADA 200-128, NADA 141-206. This list included some NADA and ANADA that were only tangentially relevant regimes (ie, in feed for the same products); however, these were assessed in case a relevant treatment was used as a comparator. Duplication refers to multiple citations of the same publication. Duplicates were removed initially in the reference management software, then again in the systematic review management software

(Distiller SR, Ontario, Canada). Linked publications, ie, the same studies reported in part or in full in different sources, were sometimes identified during the relevance screening but more commonly during data extraction. For linked publications, the more complete record was used as the citation. Reference lists from relevant reports and reviews were hand searched for additional relevant manuscripts. If these studies were published in years outside of our original search range, they were still included. When disagreements arose about the relevance of the study, the two reviewers consulted and made a determination. It was not found to be necessary to consult the sponsor designate during the eligibility assessment.

**Table S1:** CABI Web of Science search results for literature from 1970-2017†

Search No.	Search string	No. of hits
#8	#3 AND #4 AND #7	992
#7	#5 OR #6	48,073
#6	TS = (pneumonia OR pleuritis OR pleuropneumonia OR "respiratory disease" OR SRD)	35,025
#5	TS = (" <i>Mycoplasma hyopneumoniae</i> " OR M. hyo OR " <i>Actinobacillus pleuropneumoniae</i> " OR APP OR " <i>Bordetella bronchiseptica</i> " OR " <i>Pasteurella multocida</i> " OR " <i>Streptococcus suis</i> " OR " <i>Haemophilus parasuis</i> " OR Glassers Disease OR " <i>Actinobacillus suis</i> ")	16,563
#4	TS = (swine OR pig* OR piglet* OR gilt* OR boar* OR sow* OR weaner* OR hog* OR porcine OR pork* OR <i>Sus scrofa</i> OR <i>Sus domesticus</i> )	509,424
#3	#2 OR #1	42,298
#2	TS = (Baytril OR Kinetomax OR Marbox OR Marbocyl OR Forcyl OR Excede OR Excenel OR Naxcel OR Cevaxel OR Draxxin OR Zactran OR Zuprevo OR Lincomix OR Liquamycin OR Agrimycin OR Engemycin OR Nuflor OR Florkem OR Agri-cillin OR Depocillin OR Tylan OR Vetramoxin OR Polyflex OR Gentamycin OR Genta-100)	2221
#1	TS = (Enrofloxacin OR Marbofloxacin OR Danofloxacin OR Ceftiofur OR Tulathromycin OR Gamithromycin OR Tildipirosin OR Lincomycin OR Oxytetracycline OR Florfenicol OR Penicillin OR Tylosin OR Amoxicillin OR Ampicillin OR Gentamicin)	41,624

† The search was performed on October 10, 2017.

CABI = Cambridge Agricultural and Biological Index; TS = Topic search string used by CABI to identify the type of search to conduct.

**Table S2:** Criteria for exclusion of 190 full text articles from the meta-analysis

Reference	Exclusion criteria
The Upjohn Company <i>Naxcel Sterile Powder</i> <a href="https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/469">https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/469</a> . NADA 140-338 FOI Summary Supplemental New Animal Drug Application. Approved April 05, 1990. Accessed October 2017.	Level 2, Form level_2_screening_form, Population -> No-exclusion reason wrong population
Zoetis Inc. (original sponsor: Pharmacia & Upjohn Company A Division of Pfizer Inc) <i>NAXCEL Sterile Powder (ceftiofur sodium) to establish a 4-day pre-slaughter withdrawal time for swine</i> <a href="https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/476">https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/476</a> . NADA 140-338 FOI Summary Supplemental New Animal Drug Application. Approved June 18, 2004. Accessed October 2017.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response not reported
The Upjohn Company. <i>Excenel<sup>®</sup> Sterile Suspension (ceftiofur hydrochloride)</i> . <a href="https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/516">https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/516</a> . NADA 140-890 FOI Summary Original New Animal Drug Application. Approved April 26, 1996. Accessed October 2017.	Level 2, Form level_2_screening_form, Population -> No-exclusion reason wrong population
The Upjohn Company. <i>Excenel<sup>®</sup> Sterile Suspension (ceftiofur hydrochloride)</i> . <a href="https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/520">https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/520</a> . NADA 140-890 FOI Summary Supplemental New Animal Drug Application. Approved June 18, 2004. Accessed October 2017.	Level 2, Form level_2_screening_form, Population -> No-exclusion reason wrong population
Pharmacia & Upjohn Co., a Division of Pfizer, Inc. <i>Excede for Swine. Ceftiofur Crystalline Free Acid Sterile Suspension Swine</i> <a href="https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/777">https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/777</a> . NADA 141-235 FOI Summary Supplemental New Animal Drug Application. Approved September 15, 2010. Accessed October 2017.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylxis - healthy pigs
Pharmacia & Upjohn Co., a Division of Pfizer, Inc. <i>Excenel<sup>®</sup> RTU EZ Sterile Suspension, Ceftiofur hydrochloride. Sterile suspension for injection. Swine and cattle (beef, non-lactating dairy, and lactating dairy)</i> <a href="https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/851">https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/851</a> . NADA 141-288 FOI Summary Original New Animal Drug Application. Approved July 1, 2008. Accessed October 2017.	Level 2, Form level_2_screening_form, Population -> No-exclusion reason wrong population
Zoetis Inc. <i>Excenel<sup>®</sup> RTU EZ Ceftiofur Hydrochloride. Sterile Suspension. Swine and cattle (beef, non-lactating dairy, and lactating dairy)</i> . <a href="https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/852">https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/852</a> . NADA 141-288 FOI Summary Original New Animal Drug Application. Approved September 13, 2013. Accessed October 2017.	Level 2, Form level_2_screening_form, Population -> No-exclusion reason wrong population
Schering-Plough Animal Health. <i>Nuflor<sup>®</sup> 2.3% Concentrate Solution (florfenicol)</i> . <a href="https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/724">https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/724</a> . NADA 141-206 FOI Summary Original New Animal Drug Application. Approved September 04, 2002. Accessed October 2017.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Pennfield Oil Company. <i>Pennox 200 Injection</i> . <a href="https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/990">https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/990</a> . ANADA 200-154 Oxytetracycline 200 - original approval. Approved June 13, 2002. Accessed October 2017.	Level 2, Form level_2_screening_form, Population -> No-exclusion reason wrong population
Ferro A, Marca J, Navarrete E, Stipkovits L. The effect of the combination of benzylpenicillin + dihydrostreptomycin + Inmodulen <sup>®</sup> in the treatment of enzootic pneumonia. <i>Proc IPVS</i> . Melbourne, Australia. 2000;129.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Not a relevant drug
Kohn K, Neike EM. <i>Excenel<sup>™</sup> RTU (ceftiofur HCl) every-other-day treatment for acute pneumonia in pigs</i> . <i>Proc IPVS</i> . Melbourne, Australia. 2000;134.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct

**Table S2:** Continued

Reference	Exclusion criteria
Grandemange E, Benzerrak S, Woehrlé F, Boisrame B. Pharmacodynamic, pharmacokinetic and clinical properties of marbofloxacin in the treatment of respiratory diseases in fattening pigs. <i>Proc IPVS</i> . Melbourne, Australia. 2000;455.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Pallares FJ, Berrocal F, Sanchez A, Oliva JE, Munoz A, Martinez JS. Comparison of two different treatments against swine enzootic pneumonia in three sites production system. <i>Proc IPVS</i> . Melbourne, Australia. 2000;502.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Timmerman T, Dewulf J, Maes D, Catry B, de Kruif A. Antibiotics used for group treatment in Belgian pig herds. <i>Proc IPVS</i> . Hamburg, Germany. 2004;515.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
McKelvie J, Nanjiani I, Sherington J, Rowan TG, Sutherland SJ. The efficacy of tulathromycin Draxxin® in the treatment of swine respiratory disease associated with <i>Mycoplasma hyopneumoniae</i> . <i>Proc IPVS</i> . Hamburg, Germany. 2004;528.	Level 2, Form level_2_screening_form, Population -> No- challenge study
Palzer A, Ritzmann M, Wolf G, Heinritzi K. Control of a treatment with tulathromycin (Draxxin®) by bronchoalveolar lavage. <i>Proc IPVS</i> . Copenhagen, Denmark. 2006:P.20-06.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response not reported
Schuh HH, Detloff EM. Different methods of treatment to control bacterial diseases and losses in the wean to feeder period. <i>Proc IPVS</i> . Copenhagen, Denmark. 2006;P.38-14.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Salvini F, Guadagnini, G Antibiotic treatments for prdc: field experience on the use of Draxxin®. <i>Proc IPVS</i> . Copenhagen, Denmark. 2006;P05.040	Level 2, Form level_2_screening_form, Population -> No- meta-phalylxis - healthy pigs
Nanjiani I, Joaquin M, Carlos P, Pascale S, Jensen E Christian J. Metaphylaxis with tulathromycin (Draxxin®) and therapeutic use of ceftiofur (Naxcel®) against Swine Respiratory Disease and Polyserositis Complex in pigs: comparison with the use of in-feed Amoxycillin. <i>Proc IPVS</i> . Vancouver, Canada 2006;P364	Level 2, Form level_2_screening_form, Population -> No- meta-phalylxis - healthy pigs
Carles V, Nuria G, Virginia A, Rozas A, Lorenzo F. Effect of marbofloxacin treatment on <i>Haemophilus parasuis</i> colonization. <i>Proc IPVS</i> . Jeju, Korea. 2012;145.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response not reported
Lorenzo JL, Rosas ML, Menjá R, Jimáñez M, Bollo JM. Efficacy of Zuprevo 4% in the early treatment of an acute <i>H. parasuis</i> infection compared with another. <i>Proc IPVS</i> . Jeju, Korea. 2012;659.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylxis - healthy pigs
Thiry J, de Haas V, Thomas E. Efficacy of a new florfenicol formulation administered once intramuscularly in the treatment of swine respiratory disease under field conditions. <i>Proc IPVS</i> . Jeju, Korea. 2012;777.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Voss T, Eggen , Rueden S, von Berg S. Efficacy of treatment with Tildipirosin (Zuprevo®) compared with Tulathromycin (Draxxin®) treatment or vaccination, in controlling <i>Haemophilus parasuis</i> infections. <i>Proc IPVS</i> . Jeju, Korea. 2012;PP032	Level 2, Form level_2_screening_form, Population -> No- meta-phalylxis - healthy pigs
Macedo N, Torremorell M, Rovira A. Impact of early antibiotic treatment on <i>H. parasuis</i> disease, seroconversion and resistance to challenge. <i>Proc IPVS</i> . Cancun, Mexico. 2014;225.	Level 2, Form level_2_screening_form, Population -> No- challenge study
Unterweger C, Ruczizka U, Spergser J, Baums C, Hennig-Pauka I. Efficacy of early-life longtime Ceftiofur treatment in piglets on <i>Streptococcus suis</i> serotype 7 dynamics in a farm dealing with streptococcal diseases. <i>Proc IPVS</i> . Dublin, Ireland. 2016.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylxis - healthy pigs
Hoeltig D, Rohde J, Brunner B, Hellmann K, Grandemange E, Waldmann KH. Efficacy of one-shot Marbofloxacin treatment on development of porcine pleuropneumonia. <i>Proc IPVS</i> . Dublin, Ireland. 2016;329.	Level 2, Form level_2_screening_form, Population -> No- challenge study
Kondo Y, Nakanishi N, Wakui Y, Richard-Mazet A, Kinoshita G, Jeannin P. Field efficacy of ZACTRAN® (gamithromycin injectable solution) for the treatment of <i>Mycoplasma hyopneumoniae</i> for swine in Japan. <i>Proc IPVS</i> . Dublin, Ireland. 2016;572.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylxis - healthy pigs

**Table S2:** Continued

Reference	Exclusion criteria
Caldern Diaz JA, Diana A, Boyle LA, Teixeira D, Garcia Manzanilla E. Effects of antibiotic treatment during the weaner stage on pig performance and health during finishing. <i>Proc IPVS</i> . Dublin, Ireland. 2016;1343.	Level 2, Form level_2_screening_form, Population -> No- meta-phalyxis - healthy pigs
Gjestvang M, Lium B, Framstad T. A field trial to eradicate <i>actinobacillus pleuropneumoniae</i> from seropositive herds using double-dose injections with enrofloxacin (Baytril®) and in-feed medication with Tiamulin (Tiamutin®). <i>Proc IPVS</i> . Durbin, South Africa. 2008;OR.03.03.	Level 2, Form level_2_screening_form, Population -> No- meta-phalyxis - healthy pigs
Yuenyaw A, Nusupa W, Thongmak W, Navasakuljinda W, Urairong S. Field observation of efficacy of Draxxin® on nursery pig in farms in Thailand. <i>Proc IPVS</i> . Cancun, Mexico. 2014;271.	Level 2, Form level_2_screening_form, Population -> No- meta-phalyxis - healthy pigs
Kondo Y, Nakanishi N, Wakui Y, Richard-Mazet A, Tokuyama K, Kinoshita G, Jeannin P. Second-line therapeutic efficacy of ZACTRAN® (gamithromycin injectable solution) against Swine Respiratory Disease in a field trial in Japan. <i>Proc IPVS</i> . Dublin, Ireland. 2016;583.	Level 2, Form level_2_screening_form, Population -> No-exclusion reason wrong population
Schwartz KJ, Ewert KM. Clinical safety and efficacy study of Enrofloxacin administered as a single injection for the treatment and control of naturally occurring bacterial respiratory disease in pigs. <i>Proc AASV</i> . Indianapolis, Indiana. 2000:103.	Level 2, Form level_2_screening_form, Population -> No- meta-phalyxis - healthy pigs
Cardinal F. Use of Nuflor and Banamine for individual treatment of PMWS and PCV2 associated pneumonia. <i>Proc AASV</i> . Kansas City, Missouri. 2006:135-138.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response not reported
Allerson M, Deen J, Rutten St. Efficacy of tulathromycin for the treatment of at risk nursery pigs. <i>Proc AASV</i> . Orlando, Florida. 2007:71-72.	Level 2, Form level_2_screening_form, Population -> No- meta-phalyxis - healthy pigs
Eubank J, Senn MK, R. Nutsch G, Wachowski MB, Taylor LP; Moyaert H; N. Wuyts N. Comparison of efficacy of tulathromycin (DRAXXIN®) and tildipirosin (ZUPREVO®) in the treatment of <i>Mycoplasma hyopneumoniae</i> infection in pigs. <i>Proc AASV</i> . San Diego, California. 2013:415-416.	Level 2, Form level_2_screening_form, Population -> No- challenge study
Nubia M, Holtcamp A, Maxim C. Effect of antibiotic treatment on the development of <i>Haemophilus parasuis</i> disease and seroconversion. <i>Proc AASV</i> . Dallas, Texas. 2014:73-74.	Level 2, Form level_2_screening_form, Population -> No- challenge study
Nutsch GR, Merlyn JL, Collard W. Safety of DRAXXIN® 25 injectable solution (tulathromycin 25 mg/mL) in swine for treatment and control of SRD. <i>Proc AASV</i> . Dallas, Texas. 2014:73-74.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Reynolds K, Poljak Z, Friendship RM, Dewey C. A field trial investigating the effectiveness of tulathromycin injection for the control of porcine pleuropneumonia due to <i>Actinobacillus pleuropneumoniae</i> on a grower-finisher farm in an outbreak situation. <i>Proc AASV</i> . Omaha, Nebraska. 2010:333-334.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response not reported
Johnson JC, Hoover T. Health and performance improvements in pigs treated with tulathromycin injectable solution (Draxxin®) for swine respiratory disease (SRD). <i>Proc AASV</i> . Dallas, Texas. 2009:155-156.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response not reported
Hoover T, Johnson J. Clinical responses and performance of pigs treated with tulathromycin injectable solution (DRAXXIN®) for swine respiratory disease (SRD). <i>Proc Allen D. Leman Swine Conf</i> . Minneapolis, Minnesota. 2009.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response not reported
Nutsch RG, Wachowski MB, Taylor LP, Moyaert H, Wuyts N. Comparison of efficacy of Tulathromycin (Draxxin®) and Tildipirosin (Zuprevo®) in the treatment of <i>Mycoplasma hyopneumoniae</i> infection in pigs. <i>Proc Allen D. Leman Conf</i> . Minneapolis, Minnesota. 2012:230.	Level 2, Form level_2_screening_form, Population -> No- challenge study



**Table S2:** Continued

Reference	Exclusion criteria
Nutsch RG, Lucas MJ, Collard W, Lesman SP, Boucher JF, Tena JKS, Senn M. Efficacy of Draxxin® 25 injectable solution (Tulathromycin 25 mg/ml) for treatment and control of swine respiratory disease. <i>Proc Allen D. Leman Conf. Minneapolis, Minnesota.</i> 2013:230.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Fleck R, Lechtenberg K, Schieber T, Seagren, Amodie D. Draxxin at weaning for control of swine respiratory disease in a natural infection. <i>Proc Allen D. Leman Conf. Minneapolis, Minnesota.</i> 2013:231.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylxis - healthy pigs
Uffe N, Nybroe G. Efficacy evaluation of Draxxin in an acute outbreak of <i>Actinobacillus pleuropneumoniae</i> type 2 among weaner pigs in Denmark. <i>Proc Allen D. Leman Conf. Minneapolis, Minnesota.</i> 2005.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Not a relevant drug
Silva N, Sousa M. Is marbofloxacin a good candidate for treating pigs in Europe? <i>Vet Rec.</i> 2017;180:588-590.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Depondt W. Improving the outcome of antimicrobial treatment for respiratory disease. <i>Int Pig Top.</i> 2017;32:7-9.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Pepovich P, Nikolov B, Genova K, Hristov K, Tafradjiiska-Hadjiolova R, Nikolova E, Stoimenov G. The comparative therapeutic efficacy of antimicrobials in pigs infected with <i>Mycoplasma hyopneumoniae</i> . <i>Sci Works. Series C. Vet Med.</i> 2016;62:76-81.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response measure at th...
Abramov SV. Solving the problem of streptococcosis - "Maymoxi 10 microcapsulat". <i>Svinovodstvo (Moskva).</i> 2016;7:51-52.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Sala V, de Faveri E, Gusmara C, Costa A. Comparative evaluation of two quinolones in the treatment of bacterial acute respiratory disease of pig during growing-fattening phase [Valutazione comparativa in campo di due chinoloni a diversa concentrazione nel trattamento delle batteriosi respiratorie acute del ciclo magronaggio-ingrasso del suino]. <i>Large Anim Rev.</i> 2015;21:129-134.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- foreign language
Chen X, Wang W, Wu Q, Shen X, Qiu D, Dong B, Liang Z, Fang B, Zeng Z, Chen J. Preparation of polylactic acid microspheres containing lactones from <i>Venenum Bufonis</i> , its slow-release characteristics and therapeutic effects on mycoplasmal pneumonia of swine. <i>Chin J Vet Sci.</i> 2015;35:2014-2020.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Azlor O, Collell M, Fraile L. The use of tildipirosin in treating porcine respiratory disease complex. <i>Int Pig Top.</i> 2015;30:11.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Sala V, Costa A, de Faveri E, Campiotti G. Field comparative evaluation of two quinolones in the treatment of acute respiratory bacteriosis of pig fattening [Valutazione comparativa in campo di due chinoloni nel trattamento delle batteriosi respiratorie acute del ciclo magronaggio-ingrasso del suino]. <i>Atti della Societa Italiana di Patologia ed Allevamento dei Suini, XL Meeting Annuale, Montichiari, Italia.</i> 2014;279-286	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- foreign language
Hien ND, Thu HTV, Dung TTK, Bryant JE. Porcine reproductive and respiratory syndrome (PRRS): current situation in Cantho City, viral and bacterial co-infection and antibiotic treatments. <i>Proc APVSC. Ho Chi Minh City, Vietnam.</i> 2013;OR62.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Krejci R, Forget P, Guerra N, Lopez A. Resuspendability and syringeability of Vetrिमoxin LA in comparison with other injectable amoxicillin products. <i>Proc APVSC. Ho Chi Minh City, Vietnam.</i> 2013;OR15.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Moon YC, Park JY, Lee JH, Jeong PS, Kong HC, Lee SY. Control strategies of bacterial pathogens in Danji (high pig dense area). <i>Proc APVSC. Ho Chi Minh City, Vietnam.</i> 2013;PO48.	Level 2, Form level_2_screening_form, Population -> Not at all relevant

**Table S2:** Continued

Reference	Exclusion criteria
Cabezas A, Abellana J, Tasnadi G, Menjon R, Jimenez M. Comparative efficacy of Zuprevo 4% in the early treatment of <i>H. parasuis</i> infection. <i>Proc of the Joint Meeting of the 5<sup>th</sup> European Symposium of Porcine Health Management and the 50<sup>th</sup> Anniversary Meeting of the Pig Veterinary Society of Great Britain</i> . Edinburgh, UK. 2013;182.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs
Marco E, Perdido JA, Mora J, Martinez N, Roozen M. <i>Mycoplasma hyopneumoniae</i> eradication in a 800 sow herd by partial depopulation and medication with tylvalosin (Aivlosin), tulathromycin (Draxxin) and tiamulin. <i>Proc of the Joint Meeting of the 5<sup>th</sup> European Symposium of Porcine Health Management and the 50<sup>th</sup> Anniversary Meeting of the Pig Veterinary Society of Great Britain</i> . Edinburgh, UK. 2013;183.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs
Palomo A, Jimenez M, Menjon R. Study of efficacy and security of ZUPREVO 40 mg/ml (Tildipirosin) applied to treatment of pig respiratory complex. <i>Proceedings of the Joint Meeting of the 5<sup>th</sup> European Symposium of Porcine Health Management and the 50<sup>th</sup> Anniversary Meeting of the Pig Veterinary Society of Great Britain</i> . Edinburgh, UK. 2013;184.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response measure at th...
Bongiovanni E, Minelli G, Luppi A, Martelli P. Comparison of the efficacy of the oral and injectable treatments in the control of the respiratory disease of pig [Valutazione di due approcci metafilattici nel controllo della malattia respiratoria del maiale]. <i>Atti della Societa Italiana di Patologia ed Allevamento dei Suini, XXXIX Meeting Annuale</i> . Piacenza, Italia. 2013;239-245.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- foreign language
Klimov AA, Tatarchuk OP, Biryukova AV. The pharmacological basis of regimes for antibiotic therapy of respiratory diseases in pigs. <i>Svinovodstvo (Moskva)</i> . 2012;4:62-4.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Grandia J, Berges AC, Jimenez M, Menjon R. Effectiveness of tildipirosin (Zuprevo trade) in the early treatment of CRP in pigs [Eficacia de la tildipirosina (Zuprevo) en el tratamiento temprano del CRP en lechonera]. <i>Suis</i> . 2012;93:82.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Macedo N, Torremorell M, Rovira A, Holtcamp A. Enrofloxacin treatment affects the colonization stage of <i>Haemophilus parasuis</i> in weaned pigs. <i>Proc AASV</i> . Denver, Colorado. 2012;53-54.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs
Langhoff R, Stuckler T, Ladinig A, Barz A, Spergser J, Palzer A, Ritzmann M. Investigation about the effects of tulathromycin (Draxxin) against <i>Mycoplasma hyorhinis</i> in a field trial [Untersuchung der Wirksamkeit von Tulathromycin (Draxxin) gegen <i>Mycoplasma hyorhinis</i> in einem Feldversuch]. <i>Tierarztliche Umschau</i> . 2012;67:3-9.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Ardigo P, Ferrari L, Morganti M, de Angelis E, Luppi A, Gherpelli Y, Merialdi G, Volta A, Gnudi G, Saleri R, Borghetti P, Martelli P. Study on the clinical signs, the anatomic changes and the inflammatory cytokine pattern in bronchoalveolar lavage fluids of pigs suffering from spontaneous acute respiratory disease caused by <i>Actinobacillus pleuropneumoniae</i> and therapeutic implications [Studio delle manifestazioni cliniche, delle modificazioni anatomiche e del pattern infiammatorio citochinico nel liquido bronco-alveolare in suini affetti da malattia respiratoria acuta spontanea da <i>Actinobacillus pleuropneumoniae</i> : implicazioni terapeutiche]. <i>Atti della Societa Italiana di Patologia ed Allevamento dei Suini, XXXVIII Meeting Annuale</i> . Parma, Italia. 2012;187-204.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- foreign language
Senn MK, Nutsch RG, Lucas M. EXCEDE for swine sterile suspension for the control of swine respiratory disease. <i>Proc AASV</i> . Phoenix, Arizona. 2011;249-252.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs
Surprenant C, Gottschalk M. A treatment protocol designed to control <i>Mycoplasma hyorhinis</i> infection in a commercial herd points to a potential association with <i>Streptococcus suis</i> . <i>Proc AASV</i> . Phoenix, Arizona. 2011;463-464.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs

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Reference	Exclusion criteria
GuoWang L, Zhao H, Miao Z. Effect of Chinese herbs on <i>mycoplasma pneumonia</i> of swine. <i>Guizhou Agri Sci.</i> 2011;169-170.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Schmelz F. 3.0, an innovative approach to long-term treatment of bovine respiratory infections and flu in pigs [3.0 - ein innovativer Ansatz zur Langzeit-Behandlung von Rindergrippe und Atemwegsinfektionen beim Schwein]. <i>Praktische Tierarzt.</i> 2011;92:1108-1109.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Klimov AA, Tatarчук OP, Biryukova AV. Pharmacological rationale of antimicrobial therapy regimes for pig respiratory infections. <i>Svinovodstvo (Moskva).</i> 2011;8:61-62	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Arioli E, Caleffi A, Luppi A, Bonilauri P, Maioli G, Dottori M, Marco E. <i>Actinobacillus pleuropneumoniae</i> eradication program in a pig herd [Programma di eradicazione di <i>Actinobacillus pleuropneumoniae</i> in un allevamento suino]. <i>Atti della Societa Italiana di Patologia ed Allevamento dei Suini, XXXVI Meeting Annuale.</i> Montichiari, Italia. 2010;402-413.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- foreign language
Caleffi A. In field evaluation of the use of tulathromycin for Glasser Disease control in pig [Esperienza di campo sull'impiego di tulatromicina nel controllo della Malattia di Glasser del maiale]. <i>Atti della Societa Italiana di Patologia ed Allevamento dei Suini, XXXV Meeting Annuale,</i> Modena, Italia. 2009;340-344.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- foreign language
Scuka L, Oven IG, Valencak Z. Porcine respiratory disease complex (PRDC) - a meta-analysis and systematic review of the efficacy of enrofloxacin. <i>Slovenian Vet Res.</i> 2009;46:29-41.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Salvini F, Guadagnini G, Minelli G. Effectiveness and economic evaluation of the use of Draxxin in the course of swine pleuropneumonia [Efficacia e valutazione economica dell'impiego di Draxxin in corso di pleuropolmonite suina]. <i>Atti della Societa Italiana di Patologia ed Allevamento dei Suini.</i> Salsomaggiore Terme (PR), Italia. 2008;311-313.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- foreign language
van Verslaggever U. The use of Draxxin in pigs [Het gebruik van draxxin bij varkens]. <i>Dier en Arts.</i> 2008;23:492-495.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Hellman K, Keane CJ, Godinho KS, Pertoci A, Ellert J, Siciliano S, Braun G. Therapeutic and methaphylactic efficacy of tulathromycin (DRAXXIN) in porcine respiratory disease in Europe associated with <i>Haemophilus parasuis</i> [Zu Therapie und Metaphylaxe mit Tulathromycin (DRAXXIN) von <i>Haemophilus parasuis</i> hervorgerufenen Respirationserkrankungen bei Schweinen in Europa]. <i>Tierarztliche Umschau.</i> 2008;63:615-620.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Schwarz S, Bottner A, Goosens L, H. Hafez HM, Hartmann K, Kaske M, Kehrenberg C, Kietzmann M, Klarmann D, Klein G, Krabisch P, Luhofer G, Richter A, Schulz B, Sigge C, Waldmann KH, Wallmann JWerckenthin JC. A proposal of clinical breakpoints for amoxicillin applicable to porcine respiratory tract pathogens. <i>Vet Microbiol.</i> 2008;126:178-188.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Dereu A, Somers F. Why choose chlortetracycline in pigs with Porcine Respiratory Disease Complex? A review. <i>Pig J.</i> 2007;60:74-79.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Palzer A, Ritzmann M, Wolf G, Heinritz K. Assessment of the effects of a Tulathromycin (Draxxin) treatment in pigs with pneumonia with BAL [Überprüfung einer antibiotischen Behandlung mit Tulathromycin (Draxxin) mittels bronchoalveolarer lavage]. <i>Praktische Tierarzt.</i> 2007;88:820-827.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Fraile Sauce LJ, Montoya Gonzalez M. Treatment of respiratory diseases with antimicrobials [Tratamiento de enfermedades respiratorias con antimicrobianos]. <i>Suis.</i> 2007;42:36-46.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available



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Reference	Exclusion criteria
Shome Rajeswari, Shome BR, Sharma SPD, Kumar Ashok, Rahman H. Chronic respiratory infection in piglets caused by <i>Streptococcus suis</i> . <i>Indian Vet J</i> . 2006;83:94-95.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Miguel Macarrilla J, Perez J, Palomo A. New forms of treatment. Does the single dose start a a revolution? [Nuevas formas de tratamiento: comenzara la dosis unica una revolucion?] <i>Albeitar</i> . 2005;86:50-51.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Scuka L. Florfenicol - pharmacodynamic, pharmacokinetics and clinical efficacy of oral formulations in domestic animals - a systematic review. <i>Veterinarski Glasnik</i> . 2005;59:635-654.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Evans NA. Tulathromycin: an overview of a new triamilide antimicrobial for livestock respiratory disease. <i>Vet Ther</i> . 2005;6:83-95.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Klockiewicz M. Preparation Naxcel™ enables changes in the approach to treatment in pigs [Preparat Naxcel™ zmienia sposob leczenia swin]. <i>Zycie Weterynaryjne</i> . 2005;80:645-649.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Zmudzki J, Szczotka A, Jablonski A, Porowski M. Efficacy of doxycycline in multifactorial respiratory tract infections in pigs [Skuteczność doksycyliny w terapii mieszanych zakażeń układu oddechowego swin]. <i>Medycyna Weterynaryjna</i> . 2004;60:743-746.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Bercea I, Asanica V. Fluorphenicolium - an antiinfectious substance with multiple qualities [Florfenicol - substanta antiinfecioasa cu valente multiple curative si de necesitate]. <i>Revista Romana de Medicina Veterinara</i> . 2004;14:93-108.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Traeder W, Grothues M. Pharmacological characteristics and efficacy of Tulathromycin, the first representative of the Triamilide antibiotics [Pharmakologische Eigenschaften und Wirksamkeit von Tulathromycin, dem ersten Vertreter der Triamilid-Antibiotika]. <i>Tierarztliche Umschau</i> . 2004;59:102-113.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Cywinska A. Tulathromycin (Draxxin, Pfizer Animal Health) - the new treatment of swine and bovine respiratory diseases [Tulatomycyna (Draxxin, Pfizer Animal Health) - nowy antybiotyk do leczenia chorob układu oddechowego u swin i bydla]. <i>Zycie Weterynaryjne</i> . 2004;79:567-570.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Cossetini C, Candotti P, Rota NS, Cavidalli AE. A comparative efficacy study of injectable florfenicol and danofloxacin in the treatment of PRDC [Studio comparativo di efficacia di florfenicolo e danofloxacina iniettabili nel trattamento delle infezioni respiratorie del suino]. <i>Atti della Societa Italiana di Patologia ed Allevamento dei Suini 2003 XXIX Meeting Annuale</i> , Salsomaggiore Terme, Italy. 2003;419-428.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Nie JC, Zhang XY, Huang XL, Du ZL. Efficacy of tyclosone injection against <i>Mycoplasma pneumoniae</i> in swine. <i>Chin J Vet Med</i> . 2003. 39:22-23.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Gusmara C, Ostanello F, Nisoli L. Evaluation of clinical efficacy of two quinolones in parenteral therapy of acute respiratory disease of the pig [Valutazione dell'efficacia clinica di due chinoloni nella terapia parenterale della malattia respiratoria acuta del suino]. <i>Atti della Societa Italiana di Patologia ed Allevamento dei Suini 2002 XXVIII Meeting Annuale</i> , Piacenza, Italy. 2002;147-154.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- foreign language
Terreni M, Colzani A, Cavidalli AE. Efficacy of injectable florfenicol and enrofloxacin in the treatment of PRDC [Efficacia clinica del florfenicolo, paragonato all'enrofloxacina, nel trattamento parenterale delle infezioni respiratorie del suino]. <i>Atti della Societa Italiana di Patologia ed Allevamento dei Suini 2002 XXVIII Meeting Annuale</i> , Piacenza, Italy. 2002;193-197.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available

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Reference	Exclusion criteria
Meeuwse DM, Kausche FM, Hallberg JW, Bryson WL, Dame KJ. Effectiveness of a single intramuscular dose of ceftiofur hydrochloride for the treatment of naturally occurring bacterial swine respiratory disease. <i>J Swine Health Prod.</i> 2002;10:113-117.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Lang I, Rose M, Thomas E, Zschiesche E. A field study of cefquinome for the treatment of pigs with respiratory disease. <i>Revue de Medecine Veterinaire.</i> 2002;153:575-580.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Kolodziejczyk P, Pejsak Z. Efficacy of Tetramutin OT for control of Porcine Respiratory Disease Complex [Skuteczność preparatu Tetramutin OT w zwalczaniu zespołu oddechowego swin]. <i>Medycyna Weterynaryjna.</i> 2001;57:197-201.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Yeh JM. Control of swine <i>Pasteurella multocida</i> pneumonia with various chemotherapeutics. <i>Taiwan Sugar.</i> 2000;47:27-30.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Sumano LH, del Hevia PC, Ruiz SAL, Vazquez SA, Zamora MA. Clinical efficacy and pharmacokinetics of low doses of ceftriaxone in healthy pigs and pigs with respiratory disease. <i>Pig J.</i> 1998;42:33-42.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response measure at th...
Clark LK, Wu CC, van Alstine WG, Knox KE. Evaluation of the effectiveness of a macrolide antibiotic on reduction of respiratory pathogens in 12-day and 21-day weaned pigs. <i>Swine Health and Prod.</i> 1998;6:257-262.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs
Nienhoff H. Efficacy of a long-acting preparation of ceftiofur for pneumonia in pigs, evaluated by pulse oximetry and bronchoalveolar lavage [Thesis] [Wirksamkeitsprüfung einer langwirkenden Ceftiofur-Verbindung an pneumoniekranke Schweinen unter Verwendung von Pulsoxymetrie und bronchoalveolarer Lavage]. Hannover: Tierärztliche Hochschule; 1998:152.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Tsachev I, Koutsarov G, Iliev YA, Sotirov L. Effect of aerosol medication on natural resistance of pigs after bronchopneumonia. <i>Bulgarian J Agric Sci.</i> 1997;3:517-521.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Lu SX, Duan BF, Cheng HP, Cao JZ, Zhang H. Prevalence and control of <i>Actinobacillus pleuropneumoniae</i> infection in pigs. <i>Chin J Vet Med.</i> 1996;22:22.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Mills G. Establishing a <i>Streptococcus suis</i> type II-free herd by a combination of medication and removal of piglets at birth. <i>Ir Vet J.</i> 1996;49:674-679.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Kausche FM, Weiskopf S. Use of ceftiofur sodium (Excenel) for treatment of bacterial respiratory disease in swine [Einsatz von Ceftiofur-Natrium (Excenel) zur Behandlung bakterieller respiratorischer Erkrankungen des Schweines]. <i>Praktische Tierarzt.</i> 1996;77:133-142.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Altrock AV. Effectiveness of the prophylactic use of various medicinal premixes against respiratory diseases among newly-introduced fattening pigs, with reference to aetiological aspects [Thesis] [Vergleichende Untersuchungen zur Wirksamkeit unterschiedlicher Arzneimittelvormischungen als Metaphylaxe von Atemwegserkrankungen bei Mast Schweinen während der Aufstellungsphase mit Berücksichtigung aetiologischer Aspekte]. Berlin: Fachbereich Veterinärmedizin, Freie Universität, Berlin; 1996:167.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Gestin G, Ascher F, Loac E. Long acting antibiotic formulations in the treatment of acute respiratory diseases in the pigs: comparative study [Formulations antibiotiques "longue action" dans le traitement des maladies respiratoires aiguës du porc: étude comparative]. <i>Bulletin des G.T.V..</i> 1995:59-65.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available

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Reference	Exclusion criteria
Valente C, Grun MK, Cuteri V. The use of phenoxymethyl penicillin in medicated feed to control <i>Streptococcus suis</i> type 2 infection in 2 pig herds [Trattamento con fenossi-metil-penicillina potassio nel suino con infezione da <i>Streptococcus suis</i> tipo 2]. <i>Rivista di Suinicoltura</i> . 1995;36:53-55.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Herrerias JFZ, Ortega MET, Diaz JMD. Comparative efficacy of two quinolones (norfloxacin-nicotinate and enrofloxacin) and trimethoprim with sulfamethoxazole in treatment of respiratory infection with <i>Actinobacillus pleuropneumoniae</i> in pigs [Efecto de dos quinolonas (nicotinato de norfloxacina y enrofloxacina) y del trimethoprim en combinacion con sulfametoxazole en el tratamiento de enfermedades respiratorias ( <i>Actinobacillus pleuropneumoniae</i> )]. <i>Veterinaria Mexico</i> . 1995;26:95-101.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Fuhring D. Efficacy of amoxicillin against pneumonia in pigs, studied by using pulse oximetry [Thesis] [Wirksamkeitsprüfung von Amoxicillin an Pneumonie - kranken Schweinen unter Verwendung der Pulsoximetrie]. Hannover: Tierärztliche Hochschule; 1995:151.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Kielstein P. <i>Actinobacillus pleuropneumoniae</i> control: problems, opportunities and prospects [Actinobacillus-pleuropneumoniae-Bekämpfung: Problematik, Möglichkeiten, Perspektiven]. <i>Praktische Tierarzt</i> . 1994;75:92-96.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Ikoma H. Comparative field trial with enrofloxacin and danofloxacin in treatment of swine pleuropneumonia. <i>Proc IPVS</i> . Bangkok, Thailand. 1994;178.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response not reported
Flaus L, Kaewjinda W. Synergy study between lincomycin and spectinomycin against <i>Actinobacillus pleuropneumoniae</i> and <i>Pasteurella multocida</i> . <i>Proc IPVS</i> . Bangkok, Thailand. 1994;184.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Flaus L, Tan ATSC. Synergy study between lincomycin and oxytetracycline and between lincomycin and chlortetracycline against <i>Actinobacillus pleuropneumoniae</i> and <i>Pasteurella multocida</i> . <i>Proc IPVS</i> . Bangkok, Thailand. 1994;186.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Pijpers A, Vernooy JCM, Cruisjes ALM, van Leengoed LAGM, Koeman J, Hessels AH, Vandenhoek J, Verheijden JHM. Efficacy of parenteral treatment with oxytetracycline and enrofloxacin against <i>Actinobacillus pleuropneumoniae</i> in swine. <i>Proc IPVS</i> . Bangkok, Thailand. 1994;359.	Level 2, Form level_2_screening_form, Population -> No- challenge study
Clark LK, Hill MA, Kniffen TS, VanAlstine W, Stevenson G, Meyer KB, Wu CC, Scheidt AB, Knox K, Albrechts S. An evaluation of the components of medicated early weaning. <i>Swine Health and Prod</i> . 1994;2:5-11.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs
Kramomtong I, Pramoolsinsap T, Kongkrong J. Study of streptococcosis in pigs. <i>Thai J Vet Med</i> . 1994;24:157-170.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Klomberg M. Efficacy of ceftiofur against bacterial pneumonia in pigs [Thesis] [Wirksamkeitsprüfung veon Ceftiofur bei bakteriell bedingten Pneumonien des Schweines]. Berlin: Fachbereich Veterinarmedizin, Freie Universitat; 1994:184.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Chung WB, Yeh JM. Effect of drugs on the control of swine pneumonic pasteurellosis. <i>English Summary of Annual Research Report - Animal Industry Research Institute</i> , Taiwan Sugar Corporation. 1993;19.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Wandurski A. An attempt to control pleuropneumonia of pigs on an industrial farm [Proba opanowania pleuropneumonii swin w fermie przemyslowej]. <i>Medycyna Weterynaryjna</i> . 1993;49:227-228.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Neri RA, Tee MC. Field trial evaluation of ceftiofur sodium for the treatment of chronic respiratory disease in growing swine. <i>Philippine J Vet Med</i> . 1992;29:43-44.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available

**Table S2:** Continued

Reference	Exclusion criteria
Raven HP. Pleuropneumonia in growing pigs. <i>Pig Vet J.</i> 1992;29:173-178.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Varga J, Magyar K, Fodor L, Romvary A. Prevention and treatment of atrophic rhinitis in pigs with Getroxel carbadox, chlorquinaldol and oxytetracycline. <i>Acta Veterinaria Hungarica.</i> 1991;39:127-135.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Giles CJ. Danofloxacin - a new antimicrobial for the therapy of infectious respiratory diseases in cattle and swine. <i>Proc Royal Veterinary College/Pfizer Ltd symposium: on respiratory diseases in cattle and pigs.</i> Hawkshead, England. 1991;87-96.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Yang CK, Kim SJ, Cho SK. Studies on Haemophilus infection of pigs in Korea. <i>Korean J Vet Public Health.</i> 1990;14:21-33.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Pejsak Z, Hogg A, Foreman K, Wasinska B. The effect of Terramycin/LA in combination with a Bordetella/Pasteurella vaccine in controlling atrophic rhinitis in swine. <i>Proc IPVS.</i> Lausanne, Switzerland. 1990;76.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Scheidt A, Froe D, Cline T, Mayrose V, Einstein M. The use of long-acting oxytetracycline (LA 200) in two swine herds for control of enzootic pneumonia. <i>Proc IPVS.</i> Lausanne, Switzerland. 1990;87.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs
Simon F, Samjen G, Dobos-Kovacs M, Laczay P, Cserep T. Efficacy of enrofloxacin against enzootic pneumonia in swine. <i>Proc IPVS.</i> Lausanne, Switzerland. 1990;96.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response not reported
Giles CJ, Vestergaard-Nielsen K, Agger N. The efficacy of danofloxacin in the therapy of acute bacterial pneumonia in a Danish swine herd. <i>Proc IPVS.</i> Lausanne, Switzerland. 1990;102.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Luchsinger J, Chester S, Dame K. Effect of ceftiofur sodium sterile powder for treatment of naturally occurring swine respiratory disease. <i>Proc IPVS.</i> Lausanne, Switzerland. 1990;103.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs
Glawischnig E, Frank H, Weber E. Efficacy of Baytril (enrofloxacin) against some microbial infections in pigs [Uber die Wirkung von Baytril bei einigen durch Mikroorganismen verursachten Infektionskrankheiten des Schweines]. <i>Wiener Tierarztliche Monatsschrift.</i> 1989;76:91-96.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Frank HM. Treatment and prophylaxis of enzootic pneumonia in pigs with Baytril [Zur Therapie und Prophylaxe der Enzootischen Pneumonie des Schweines mit Baytril]. <i>Wiener Tierarztliche Monatsschrift.</i> 1989;76:312.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
de la Parra A, Cuevas R. Evaluation of the combination of tiamulin, sulfamethazine and furazolidone compared with oxytetracycline, for the prevention of enzootic pneumonia. <i>Proc IPVS.</i> Rio de Janeiro, Brazil. 1988;56.	Level 2, Form level_2_screening_form, Population -> No- meta-phalylaxis - healthy pigs
Hsu FS, Fang FWS. Evaluation of Lincospectin sterile solution and Lincospectin 44 premix in the treatment of <i>Haemophilus pleuropneumonia</i> . <i>Proc IPVS.</i> Rio de Janeiro, Brazil. 1988;91.	Level 2, Form level_2_screening_form, Population -> No- challenge study
Varga J, Magyar K, Romvary A, Fodor L. Prevention and treatment of atrophic rhinitis in pigs with getroxel, chlorquinaldol and oxytetracycline. <i>Veterinary pharmacology, toxicology and therapy in food producing animals. 4<sup>th</sup> Congress of European Association for Veterinary Pharmacology and Toxicology.</i> Budapest, Hungary. 1988;56.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available

**Table S2:** Continued

Reference	Exclusion criteria
Molnar L. Pleuropneumonia caused by <i>Actinobacillus (Haemophilus) pleuropneumoniae</i> (parahaemolyticus) in swine. IV. Treatment and drug sensitivity of Hungarian strains [A szeres <i>Haemophilus pleuropneumoniae</i> (parahaemolyticus) okozta tudo-mellhartya gyulladasa. IV. A betegseg gyógykezelese, a hazai izolalasu torzsek gyogyszerezzenyesege]. <i>Magyar Allatorvosok Lapja</i> . 1986;41:395-599.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Girardi C, Piumatti M. Use of amoxicillin in swine diseases (enteritis pneumonia, arthritis, agalactia) [Impiego della amoxicillina in patologia suina]. <i>Selezione Veterinaria</i> . 1986;27:315-320.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Backstrom L, Evans RA. Effect of short-term therapy with lincomycin or lincomycin/sulfamethazine combination on atrophic rhinitis in swine. <i>Proc CRWAD</i> . 1985;66:47.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Jones DJ. Control of common respiratory diseases in young pigs through proper management. <i>Agri-Practice</i> . 1984;5:17-24.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Kumar AA, Parai TP. Swine pasteurellosis and its treatment. <i>Indian J Vet Med</i> . 1984;4:63-64.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Burch DGS. The evaluation of tiamulin by injection for the treatment of enzootic pneumonia and mycoplasmal arthritis of pigs. <i>Proc IPVS</i> . Ghent, Belgium. 1984;117.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Ose EE, Mackinnon JD. The comparative efficacy of tylosin, macrocin and desmicosin for the control of respiratory mycoplasmosis of piglets. <i>Proc IPVS</i> . Ghent, Belgium. 1984;118.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Douglas RGA. An evaluation of the efficacy of a combination of penicillin, chlortetracycline and sulphadimidine in the prevention of deaths caused by <i>Streptococcus suis</i> type 2 in pigs. <i>Proc IPVS</i> . Ghent, Belgium. 1984;137.	Level 2, Form level_2_screening_form, Population -> No- meta-phalyxis - healthy pigs
de Jong MF. Treatment and control of atrophic rhinitis in the Netherlands. <i>Atrophic rhinitis in pigs</i> . 1983;165-176.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Cvetnic S, Blagovic S, Ziger K, Brezovec S. Clinical experiences in the treatment of enzootic bronchopneumonia in cattle and pneumonia in pigs with oxytetracycline. <i>Praxis Veterinaria</i> . 1983;31:81-84.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Mefford DE, Vinson RA, Swafford WS, Pinkston ML. The efficacy of long-acting oxytetracycline and/or bordetella/pasteurella bacterin in a swine herd with enzootic atrophic rhinitis. <i>Vet Med Small Anim Clinician</i> . 1983;78:1911-1916.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Chen BX. Report on the rapid control and eradication of enzootic pneumonia in swine. <i>Chin J Vet Med</i> . 1982;8:8-11.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Cai, CY, Liang YJ, Li RX. Experiments on the oral administration of Terramycin to sows affected by enzootic pneumonia with a view to breeding healthy piglets. <i>Chin J Vet Med</i> . 1982;8:10-11.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Fortushnyi VA. Antibacterial preparations for acute pneumonia (calf and piglet). <i>Veterinariya</i> . Moscow, USSR. 1982;10:50.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Shakhov AG, Antipov VA, Sukhov NM, Antipova IA, Kovalev VF. Fradizin (a tylosin preparation) for respiratory diseases of swine. <i>Veterinariya</i> . Moscow, USSR. 1982;55-57.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available



**Table S2:** Continued

Reference	Exclusion criteria
Klos H. Practice experiences in the treatment and prophylaxis of acute bronchopneumonia and atrophic rhinitis of pigs with Terramycin 100 and Terramycin/LA [Praktische Erfahrungen in Therapie und Prophylaxe bei akuter Bronchopneumonie und Rhinitis atrophicans des Schweines mit Terramycin 100 und Terramycin/LA]. <i>Praktische Tierarzt</i> . 1981;62:890-894.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
DeGeeter MJ, Kakuk TJ, Farrington DO, Barnes HJ, Armstrong CA. Lincomycin for treatment of swine mycoplasmal pneumonia - natural infection. <i>J Anim Sci</i> . 1979;Suppl.1:49:239.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Blagovic S, Bilic V. Use of ampicillin to treat digestive and respiratory infections of swine [Upotreba ampicilina (Ampivet) za liječenje crijevnih i respiratornih infekcija svinja]. <i>Praxis Veterinaria</i> . 1979;27:93-101.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
de Jong MF, Oosterwoud RA. Treatment with oxytetracycline hydrochloride in the prevention of atrophic rhinitis in baby pigs. <i>Tijdschrift voor Diergeneeskunde</i> . 1977;102:266-273.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Bercovich Z, de Jong MF. Measures for the prevention and treatment of atrophic rhinitis in piglets under field conditions [Enkele profylactische en therapeutische maatregelen tegen atrofische rhinitis bij de big onder praktijkomstandigheden]. <i>Tijdschrift voor Diergeneeskunde</i> . 1977;102:448-455.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Hamm D, Reynolds WA, Szanto J, Maplesden DC. Comparative efficacy of Tiamutilin hydrogen fumarate (SQ 22,947; 81.723 hfu) and tylosin given intramuscularly for the treatment of enzootic pneumonia in naturally infected swine. <i>Proc IPVS</i> . Ames, Iowa. 1976;PP3.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Markiewicz K, Markiewicz Z, Depta A, Luczak Z. Studies on the therapeutic value and side effects of Neotarchocin (oxytetracycline and neomycin) in animals (calves and piglets) [Badania nad przydatnoscia lecznicza i dzialaniem ubocznym preparatu Neotarchocin u zwierzat]. <i>Zeszyty Naukowe Akademii Rolniczo-Technicznej w Olsztynie, Weterynaria</i> . 1975:115-128.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Sampson GR, Sauter RA, Gregory RP. Clinical appraisal of injectable tylosin in swine. <i>Modern Vet Pract</i> . 1974;55:261.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Nikitin IN. Economic effectiveness of veterinary measures against bronchopneumonia in calves, piglets, lambs [Ekonomicheskaya effektivnost veterinarnykh meropriyatiya]. <i>Prevention and treatment of diseases of young farm animals [Profylaktika i lechenie zaboлевanii molodnyaka zhivotnykh]</i> . 1974;175-178.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Androsik NN, Dushuk RV, Ivanov DP. Use of oxytetracycline in porcine infectious pneumonia due to Mycoplasma. <i>Belorusskii Nauchno-issledovatel'skii Veterinarnyi Institut, Minsk</i> . 1974;12:72-74.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Singh KP. Pasteurellosis in pigs. <i>U.P. Vet J</i> . 1974;2:1-5.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Taillandier JJ. Porcine enzootic pneumonia: treatment and prophylaxis by drugs [Pneumonie enzootique du porc: traitement et prophylaxie medicale]. <i>Recueil de Medecine Veterinaire</i> . 1973;149:1393-1402.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Dabija G, Nemteanu S, Moldoveanu C, Constantinescu V. Ampicillin in the treatment of pulmonary and enteric diseases of calves and piglets [Ampicilina in tratamentul pneumoenteropatiilor la vitei si porcei]. <i>Revista de Zootechnie si Medicina Veterinara</i> . 1973;23:47-51.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available

**Table S2:** Continued

Reference	Exclusion criteria
Parfenov IS. Use of ditetracycline (benzathine dimethyltetracycline) for salmonellosis, pneumonia and enteritis in piglets [Primenenie ditetratsiklina pri salmonelleze, pnevmonii i enteritakh molodnyaka svinej]. <i>Trudy Vsesoyuznogo Instituta Eksperimental'noi Veterinarii</i> . 1972;40:348-359.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Plonait H. Drug prophylaxis and therapy of chronic respiratory diseases in pigs (brief clinical communication). <i>Deutsche Tierarztliche Wochenschrift</i> . 1970;77:473-475.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Vilalta C, Giboin H, Schneider M, El Garch F, Fraile L. Pharmacokinetic/ pharmacodynamic evaluation of marbofloxacin in the treatment of <i>Haemophilus parasuis</i> and <i>Actinobacillus pleuropneumoniae</i> infections in nursery and fattener pigs using Monte Carlo simulations. <i>J Vet Pharmacol Ther</i> . 2014;37:542-549.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Macedo N, Rovira A, Oliveira S, Holtcamp A, Torremorell M. Effect of enrofloxacin in the carrier stage of <i>Haemophilus parasuis</i> in naturally colonized pigs. <i>Can J Vet Res</i> . 2014;78:17-22.	Level 2, Form level_2_screening_form, Population -> No- meta-phalxyis - healthy pigs
Vilalta C, Galofre N, Aragon V, de Rozas A, Fraile L. Effect of marbofloxacin on <i>Haemophilus parasuis</i> nasal carriage. <i>Vet Microbiol</i> . 2012;159:123-129.	Level 2, Form level_2_screening_form, Population -> No- meta-phalxyis - healthy pigs
Couper A, Cromie L, Neeve S, Pommier P, Keita A, Pagot E. Treatment of pneumonia in pigs with long-acting injectable tylosin. <i>Vec Rec</i> . 2006;159:805-807.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Evans NA. Tulathromycin: an overview of a new triamilide antibiotic for livestock respiratory disease. <i>Vet Ther: Res Appl Vet Med</i> . 2005;6:83-95.	Level 2, Form level_2_screening_form, Population -> Not at all relevant
Hoflack G, Maes D, Mateusen B, Verdonck M, de Kruif A. Efficacy of tilmicosin phosphate (Pulmotil premix) in feed for the treatment of a clinical outbreak of <i>Actinobacillus pleuropneumoniae</i> infection in growing-finishing pigs. <i>J Vet Med, B, Infect Dis Vet Public Health</i> . 2001;48:655-664.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Thomas E, Grandemange E, Pommier P, Wessel-Robert S, Davot JL. Field evaluation of efficacy and tolerance of a 2% marbofloxacin injectable solution for the treatment of respiratory disease in fattening pigs. <i>Vet Q</i> . 2000;22:131-135.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Markowska-Daniel I, Pejsak Z. Efficacy of a combination of amoxicillin and clavulanic acid in the treatment of pneumonia of pigs. DTW. <i>Deutsche tierarztliche Wochenschrift</i> . 1999;106:518-522.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Kamminga M, Vernooy JC, Schukken YH, Pijpers A, Verheijden JH. The clinical recovery of fattening pigs from respiratory disease after treatment with two injectable oxytetracycline formulations. <i>Vet Q</i> . 1994;16:196-199.	Level 2, Form level_2_screening_form, Outcome: Does the study report treatm... -> No - treatment response measure at th...
Willson PJ, Osborne AD. Comparison of common antibiotic therapies for <i>Haemophilus pleuropneumonia</i> in pigs. <i>Can Vet J</i> . 1985;26:312-316.	Level 2, Form level_2_screening_form, Population -> No- challenge study
J. P. Kunes. A comparison of two antibiotics in treating <i>Mycoplasma pneumonia</i> in swine. <i>Vet Med, Small Anim Clinic</i> . 1981;76:871-872.	Level 2, Form level_2_screening_form, Population -> No- meta-phalxyis - healthy pigs
Bentley OE, Magonigle RA, Shively JE, Simpson JE. A novel oxytetracycline formulation for the treatment of swine pneumonia. <i>Proc USAHA</i> . Louisville, Kentucky. 1980;84:515-517.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Cameron RD, Kelly WR. An outbreak of porcine pleuropneumonia due to <i>Haemophilus parahaemolyticus</i> . <i>Aust Vet J</i> . 1979;55:389-390.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Drug correct but regime not correct
Goodwin RF. Activity of tiamulin against <i>Mycoplasma suipneumoniae</i> and enzootic pneumonia of pigs. <i>Vec Rec</i> . 1979;104:194-195.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
G. R. Sampson, R. F. Bing, H. P. Grueter, E. E. Ose, M. Havens. Effect of tylosin and sulfamethazine on naturally-occurring bacterial pneumonia in swine. <i>Vet Med, Small Anim Clinic</i> . 1973;68:543-544.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available

**Table S2:** Continued

Reference	Exclusion criteria
Glawischnig E, Schuller W. Preventive chemotherapy of enzootic porcine pneumonia by parenteral administration of Tylan. <i>DTW. Deutsche tierärztliche Wochenschrift.</i> 1972;79:261-263.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Schuller W, Schlerka G. Use of tylosine in a herd of pigs infected with enzootic pneumonia and atrophic rhinitis. <i>Wiener tierärztliche Monatsschrift.</i> 1972;59:181-183.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Huhn RG. The action of certain antibiotics and ether on swine enzootic pneumonia. <i>Can J Comp Med.</i> 1971;35:1-4.	Level 2, Form level_2_screening_form, Population -> No- challenge study
Wilson JB, McArthur JS, Christie EH, Russ RG. Lincomycin in enzootic pneumonia of pigs. <i>Vec Rec.</i> 1970;86:86-87	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Larsen KV, Dahl J, Baekbo P. Clinical testing of an eradication strategy of a sow herd for <i>Actinobacillus pleuropneumoniae</i> types 1 and 6 and <i>Mycoplasma hyopneumoniae</i> involving medication with Baytril (enrofloxacin) powder 2.5%. <i>Proc IPVS.</i> Birmingham, England. 1998;249.	Level 2, Form level_2_screening_form, Population -> No- meta-phalxyxis - healthy pigs
Schneider M, Galland D, Giboin H, Woehrl F. Pharmacokinetic/ pharmacodynamic testing of marbofloxacin administered as a single injection for the treatment of porcine respiratory disease. <i>Proc Int Cong Eur Assoc Vet Pharmacol Toxicol.</i> Noordwijkerhout, the Netherlands. 2012;192-193.	Level 2, Form level_2_screening_form, Is the full text available in English? -> No- no attachment so not available
Hamm D. Comparative effective of Tiamulin and Tylosin given IM for the treatment of EP in naturally infected swine. <i>Proc IPVS.</i> Ames, Iowa. 1976;PP4.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Not a relevant drug
Groop, J. Efficacy of Tiamulin in the treatment of <i>Mycoplasma pneumoniae</i> of swine. <i>Proc IPVS.</i> Zagreb, Yugoslavia. 1978:M24.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Not a relevant drug
Ose EE, MacKinnon JD. Comparative efficacy of tylsin, Macrocin and Desmycosin. <i>Proc IPVS.</i> Ghent, Belgium. 1984;118.	Level 2, Form level_2_screening_form, Population -> No- challenge study
Webster CJ, Jones RL. Clinical efficacy of amoxicillin/Clavulanic Acid in bacterial infections of pigs. <i>Proc IPVS.</i> Lausanne, Switzerland. 1990;1988.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Not a relevant drug
Doportto DJM, Trujillo OME, Zuniga J. Comparative efficacy of two quinolines against natural respiratory infections by APP. <i>Proc IPVS.</i> The Hague, The Netherlands. 1992;232.	Level 2, Form level_2_screening_form, Intervention: Does the paper appear t... -> No - Not a relevant drug
Tarasiuk K, Truszczynski M, Pejsak Z. Efficacy of Amoxicillin in the control of swine pleuropneumonia cause by APP. <i>Proc IPVSC.</i> The Hague, The Netherlands. 1992;233	Level 2, Form level_2_screening_form, Population -> No- meta-phalxyxis - healthy pigs

**Table S3:** Definitions of swine respiratory disease used by studies included in the meta-analysis

Reference number	Swine respiratory disease definition
1	A pig with a rectal temperature $\geq 104.0^{\circ}$ F, increased respiratory rate, labored or dyspneic breathing, and depressed attitude was considered sick and febrile.
2	Pigs with a depression score of $\geq 2$ (on a scale of 0 [normal] to 3 [severe depression]) and a respiratory score $\geq 2$ (on a scale from 0 [normal] to 3 [severe respiratory distress]) and a rectal temperature $\geq 104.0^{\circ}$ F were weighed, randomized to treatment groups, and treated (Day 0).
3	Pigs experiencing natural occurrences of bacterial respiratory disease (bacterial pneumonia).
4	Pigs were enrolled if they showed signs of bacterial respiratory disease and met the entrance criteria – a combined general appearance and respiratory index score of 2 or greater, and a rectal temperature of $\geq 104.1^{\circ}$ F.
5	Two hundred nineteen females and castrated males, with an average initial weight of 21 kg, were enrolled in the study when they showed pyrexia ( $40.3^{\circ}$ or $40.5^{\circ}$ C depending on the site) associated with dyspnea.
6	Pigs that exhibited markedly increased respiratory rate and a rectal temperature $\geq 39.8^{\circ}$ C were enrolled (study day 1).
7	One hundred five grower pigs with symptoms of severe swine acute respiratory disease were randomly assigned to 2 treatment groups based on 2 inclusion criteria, (i) body temperature $\geq 40.0^{\circ}$ C and (ii) a total clinical score $> 3$ .
8	The criteria for inclusion in the study were the following: pyrexia $\geq 40^{\circ}$ C, clinical disease index score (CDIS) $\geq 2$ , (0 = healthy, 1 = slightly ill, 2 = moderately ill, 3 = severely ill, 4 = dying), and dyspnea or depression $\geq 2$ (0 = absent, 1 = mild, 2 = moderate, 3 = severe).
9	Pigs with moderate or severe respiratory disease and pyrexia ( $\geq 40^{\circ}$ C) were treated with amoxicillin/clavulanic acid (Synulox RTU) at 7.0/1.75 mg/kg on days 0, 1 and 2 or tulathromycin at 2.5 mg/kg on day 0 only.
10	The inclusion criteria were: pyrexia ( $\geq 40.3^{\circ}$ C), a $\geq 2$ clinical disease score together with one of the following respiratory signs: at least moderate dyspnea ( $\geq 2$ score), at least moderate depression ( $\geq 2$ score) or at least moderate cough ( $\geq 2$ score) with 0 = absent, 1 = mild, 2 = moderate, 3 = severe.
11	Pigs with rectal temperature $\geq 40.0^{\circ}$ C, respiratory symptoms and depression according to pre-established scores were eligible for both studies.
12	Pigs evaluated by clinical scores including rectal temperature.
13	At study inclusion (Day 0), pigs had moderate (score 2) or severe (score 3) clinical signs of swine respiratory disease (depression, dyspnea, coughing and sneezing) in combination with pyrexia (rectal temperature $\geq 40.0^{\circ}$ C).
14	On each test site, pigs from the same batch were included by assessing clinical signs of swine respiratory disease using clinical scores for respiratory condition, cough, physical activity, appetite and recording rectal temperature. Pigs having a minimum level of a composite clinical score and a body temperature of at least $39.5^{\circ}$ C were enrolled in the study.
15	Each enrolled animal was clinically assessed daily for clinical signs including depression, respiratory scores, and rectal temperature.
16	Animals with rectal temperatures $\geq 104.5^{\circ}$ F ( $40.3^{\circ}$ C) were randomly assigned to one of three treatments groups.
17	After at least 14 days of antibiotic removal, pigs (N = 346, 9 locations; BW 3.6 - 24.5 kg) exhibiting clinical signs of swine respiratory disease were enrolled on study on day 0 when they scored 2 or greater for a combined respiratory index (4 category index) and general appearance (5 category index) and also had a body temperature $\geq 104^{\circ}$ F.
18	Pigs meeting the following criteria were included in the study: Pyrexia $\geq 104.5^{\circ}$ F, AND Depression $\geq 2$ on a scale of 0 to 3, AND Dyspnea score $\geq 2$ on a scale of 0 to 3.

**Table S3: Continued**

<b>Reference number</b>	<b>Swine respiratory disease definition</b>
19	Pigs that exhibited clinical signs of swine respiratory disease (respiratory or attitude scores > 1). Respiratory scoring criteria were as follows: 0 = normal; 1 = mild increase in respiratory effort and/or occasional cough; 2 = moderate increase in respiratory effort and/or obvious cough; 3 = dyspnea (eg, gasping or open-mouthed breathing) and/or cyanosis. Clinical attitude scoring was as follows: 0 = normal; 1 = mild depression, pig appears mildly depressed or lethargic prior to stimulation, upon stimulation appears normal; 2 = moderate depression, pig will rise upon stimulation but appear lethargic; 3 = severely depressed or moribund, unable to rise, resistant to stimulation but will rise, continues to look depressed, or seeks to lie down. Animals at each site were monitored until an outbreak of respiratory disease was confirmed, and affected pigs were then enrolled individually onto the study when they met pre-defined criteria of pyrexia (rectal temperature $\geq 40^{\circ}\text{C}$ ) and clinical signs of respiratory disease.
20	Animals with temperatures of $\geq 40.3^{\circ}\text{C}$ ( $104.5^{\circ}\text{F}$ ) were randomly assigned to one of two treatments groups.
21	Enrollment criteria consisted of signs of swine respiratory disease that included a rectal temperature $\geq 40^{\circ}\text{C}$ , abnormal respiration (respiratory score $\geq 2$ ), and abnormal attitude (attitude score $\geq 2$ ).
22	Pigs which had lost vigor and appetite and had respiratory symptoms - abdominal respiration, fever ( $40^{\circ}\text{-}42^{\circ}\text{C}$ ), coughing, etc.
23	Thereafter, animals exhibiting clinical signs of acute pneumonia together with pyrexia ( $> 40^{\circ}\text{C}$ ) were weighed and randomly allotted on the basis of body weight and severity of illness, to receive either 1.25 mg/kg danofloxacin or 20,000 IU:25 mg/kg benzylpenicillin/dihydrostreptomycin (PC/DSM) by intramuscular injection in the neck, once daily for three consecutive days.
24	Pigs with moderate to severe clinical signs of respiratory disease were divided into 3 groups as indicated in the experimental design.
25	For an animal to be enrolled on day 0, it was required to have a temperature of $\geq 40.2^{\circ}\text{C}$ and a minimum of moderate respiratory signs and moderate depression as determined by the blinded examining veterinarian.



**Table S4:** Definitions of treatment success or failure

Reference number	Outcome definition
1	A pig was considered a treatment success if it had a rectal temperature of < 104.0° F, normal respiratory character, and no or mild depression on Day 4.
2	Treatment success was defined as an animal that was not removed from the study for swine respiratory disease from Days 1 to 7, and that had a depression score ≤ 1 and a respiratory score ≤ 1 and a rectal temperature < 104° F on Day 7.
3	Gainers (pigs that survived and gained 5 pounds in 14 days)
4	Treatment was considered a success (clinical cure) if the sum of the general appearance score and respiratory index was 0 or 1 and body temperature was ≤ 104.0° F, on both Days 3 and 6.
5	Only failure was defined, however: Failure (pyrexia > 40.3° C associated with dyspnea) was assessed on days 4 and 9. [Note that the data was converted to success (no pyrexia) for the purposes of the data extraction.]
6	The primary variables of interest (decision variables) were cumulative mortality, lung lesion scores at study day 15, and percent growers (defined as pigs surviving the 15-day study period and gaining at least 2.5 kg).
7	Lack of dyspnea. Dyspnea was not defined by the authors.
8	Treatment success was defined as a temperature < 40° C and a 0 score in the studied variables (clinical disease index score, dyspnea, depression).
9	Animals were clinically examined and rectal temperatures recorded daily for 15 days and weighed on day 0 and day 14. Pigs that met the enrolment criteria on any two consecutive days from day 2 to 14 were classified as treatment failures and withdrawn to permit further medication. Successes were pigs free from clinical swine respiratory disease at day 14.
10	Percent Pyrexia: Defined as ≥ 40.3° C. [Note that the data was converted to success (no pyrexia) for the purposes of the data extraction.]
11	Efficacy criteria were the number of animals completing the study on day 14 without meeting predefined removal criteria during the daily examinations (rectal temperature ≥ 40° C, plus at least moderate respiratory symptoms and at least mild depression), cure rate on day 5, reduction of rectal temperature, respiratory and depression score compared to baseline, mortality, and weight gain.
12	Based on daily observation and specific criteria, pigs became either treatment failures (withdrawals) or remained on study until final evaluation on day 10.
13	The primary efficacy variable was the cure rate on day 14 with the objective to demonstrate non-inferiority of tulathromycin compared to tildipirosin based on percentage of clinical cure (swine respiratory disease score ≤ 1) on day 14.
14	A clinical improvement index was calculated for each pig using the clinical scores recorded on day 0 and day 7. The proportion of improved pigs for each treatment was compared using a non-inferiority hypothesis test (non-inf. margin = 0.15).
15	Each enrolled animal was assessed daily for clinical signs including depression, respiratory scores, and rectal temperature. On day 10, all remaining animals were evaluated as treatment success or failure.
16	Florfenicol-treated pigs were statistically significantly improved over the negative control pigs with regard to mortality rate, dyspnea, rectal temperature, depression, illness index score, weight gain, and lung lesion scores.
17	Clinical cure rate was defined as the percentage of pigs that had a combined general appearance score and respiratory score of either 0 or 1 and a body temperature of less than 104° F on both days 3 and 6 post-enrollment.
18	Failure was declared based on day 6 observations when the following criteria were met: Rectal temperature ≥ 104° F or depression score ≥ 2 or dyspnea score ≥ 2 or mortality/moribund with euthanasia before day 6. [Note that the data was extracted as "Success".]

**Table S4:** Continued

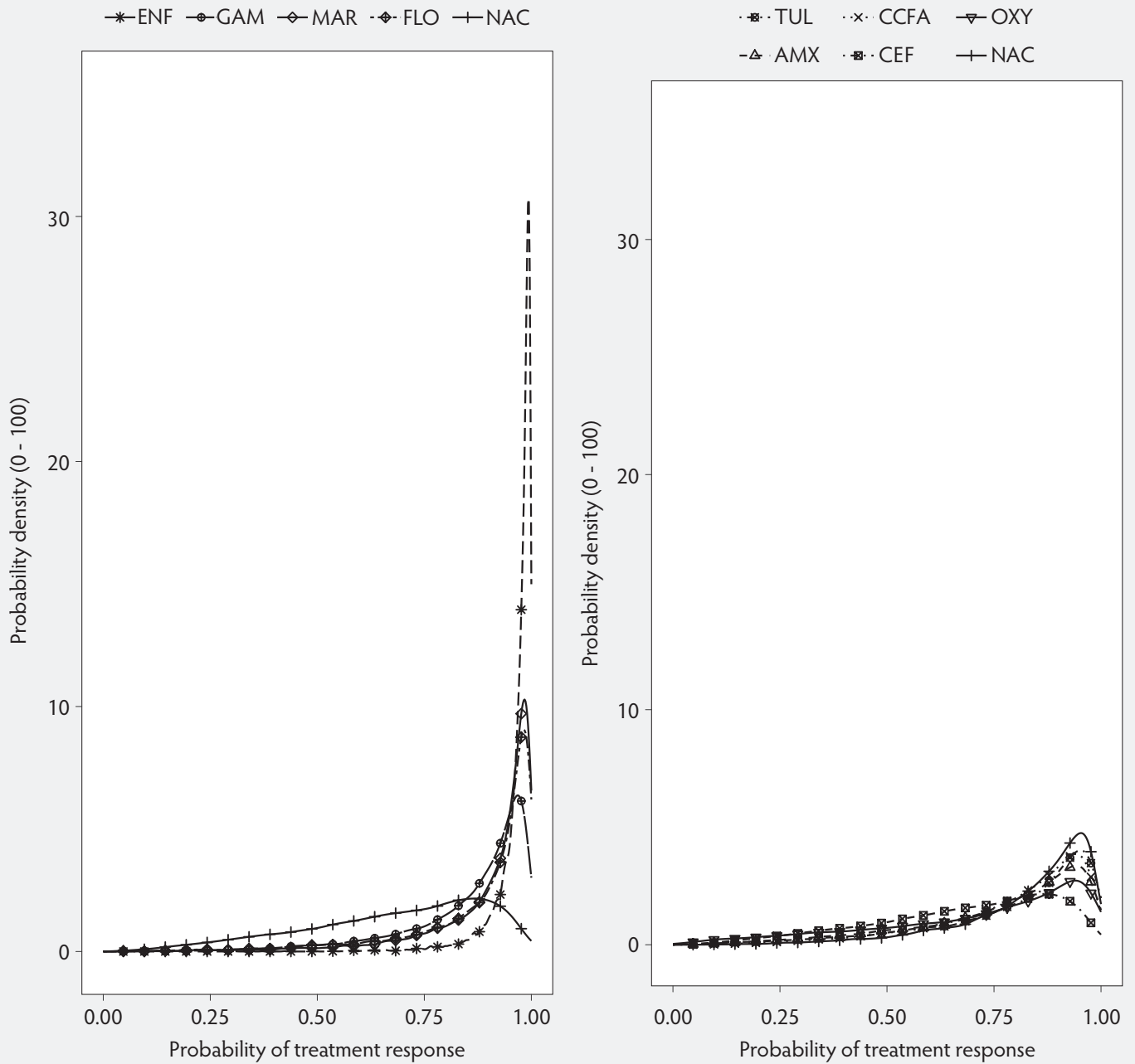
Reference number	Outcome definition
19	On day 7 following treatment, surviving animals were considered cured if they were not removed because of disease other than swine respiratory disease, did not have a respiratory or attitude score > 1, or a rectal temperature $\geq 40^{\circ}$ C. Efficacy was assessed on the basis of changes in rectal temperature, severity and prevalence of clinical signs of respiratory disease, and the number of animals completing the study to day 10.
20	Success rate was not explicitly defined. However, it appears that coughing, dyspnea, rectal temperature, and depression were examined.
21	Treatment success on day 10 was defined as: respiratory score < 2, and attitude score of < 2, and rectal temperature < $40^{\circ}$ C.
22	Efficacy rate is assumed to mean the percent of animals with an "Excellent" ("The total score the day after completion of medication was improved by 80% or more from that on the first day of medication.") or "Good" ("The total score three days after completion of medication was improved by 80% or more from that on the first day of medication.") clinical outcome.
23	Pigs having an excellent response (85% to 100% reduction in clinical illness score) or good response (70% to 84% reduction in clinical illness score) to treatment, as measured by reduction in illness scores by day 4.
24	Percent cured. Based on the text of the Results and Table 1, it appears only the pigs in the "highly effective" category were considered cured ["...only 43% of diseased animals were cured when a 1 mg/kg dosage of ceftiofur was used."]
25	Cure was defined as normal rectal temperature ( $\leq 40^{\circ}$ C) and absence of clinical signs of depression and absence of respiratory signs.

**Table S5:** Summary of probability of treatment response

	Mean	Median	Minimum	Maximum	25 quantile	97.5 quantile
Non-active control	0.68	0.72	0.03	0.99	0.21	0.96
Amoxicillin	0.79	0.86	0.02	1.00	0.28	0.99
Ceftiofur CFA	0.77	0.83	0.04	1.00	0.27	0.99
Ceftiofur (MD)	0.79	0.85	0.06	1.00	0.34	0.98
Enrofloxacin	0.96	0.98	0.31	1.00	0.82	1.00
Florfenicol	0.86	0.91	0.06	1.00	0.44	0.99
Gamithromycin	0.90	0.95	0.01	1.00	0.47	1.00
Marboflaxacin	0.88	0.94	0.03	1.00	0.42	1.00
Oxytetracycline	0.72	0.79	0.01	1.00	0.15	0.99
Tildipirosin	0.83	0.88	0.07	1.00	0.39	0.99
Tulathromycin	0.83	0.88	0.08	1.00	0.41	0.99

CFA = crystalline free acid; MD = multidose.

**Figure S1:** Probability of treatment response for treatment regimens included in Table S4. ENF = enrofloxacin; MAR = marboflaxacin; TIL = tilidipirosin; GAM = gamithromycin; FLO = florfenicol; NAC = non-active control; TUL = tulathromycin; CCFA = ceftiofur crystalline free acid; OXY = oxytetracycline; AMX = amoxicillin; CEF = ceftiofur.



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