

Matt Denwood
Professor of Computational and Statistical Disease Modelling

Section for Animal Welfare and Disease Control
Department of Veterinary and Animal Sciences
Faculty of Health and Medical Sciences
University of Copenhagen

Postal address:
Grønnegårdsvej 8, 1870 Frederiksberg C
Email: md@sund.ku.dk
Phone: +4535332307
Web: <https://ivh.ku.dk/english/employees/?pure=en/persons/487288>

Short presentation

My main research interests are in the application of quantitative epidemiology to problems affecting animal disease and production, including statistical and mathematical modelling of animal disease systems, appropriate consideration of diagnostic tests for evaluation of disease, and the use of stochastic modelling as a tool to understand the underlying processes of disease systems. These interests are supported by a combination of my veterinary background, statistical knowledge, experience of government advisory work, and programming skills, which have given me a unique insight into problems at the intersection between applied and theoretical aspects of epidemiology and quantitative biology. I also have extensive experience of applying computationally intensive statistical methods to problems within ecology and epidemiology through ongoing collaboration with researchers from veterinary, medical and life science departments at a variety of research and governmental institutions in Denmark, the UK and worldwide. As a researcher working in the veterinary domain I receive funding grants from various relevant government, charity and livestock industry bodies.

Research outputs

Using registry data to identify individual dairy cows with abnormal patterns in routinely recorded somatic cell counts

Henningsen, Maj Beldring, Reimert, Mossa Merhi, Denwood, Matt, Gussmann, Maya Katrin, Kirkeby, Carsten & Nielsen, Søren Saxmose, 21 Feb 2024, In: *Journal of Theoretical Biology*. 579, p. 1-7 7 p., 111718.

Accuracy of three diagnostic tests to detect tooth resorption in unowned unsocialised cats in Denmark

Eriksson, Jacob Mattias, Denwood, Matt, Nielsen, Søren Saxmose, McEvoy, Fintan, Allberg, Clara, Thuesen, Ida Sofie & Kortegaard, Hanne Ellen, 2024, (E-pub ahead of print) In: *Journal of Small Animal Practice*.

Quantifying human toxoplasmosis risk from pork consumption in Denmark : A conceptual framework for tissue cyst-based analysis

Olsen, Abbey , Swart, A., Pires, S. M., Fagt, S., Møgelmoose, V., Houe, Hans, Denwood, Matt, Nielsen, H. V. & Alban, L. M., 2024, *Vergne, T. and Robinson, P.A. (eds). Proceedings of the Society for Veterinary Epidemiology and Preventive Medicine annual meeting held in Uppsala, Sweden, SVEPM*.

A general framework to support cost-efficient fecal egg count methods and study design choices for large-scale STH deworming programs—monitoring of therapeutic drug efficacy as a case study

Coffeng, L. E., Vlamincq, J., Cools, P., Denwood, M., Albonico, M., Ame, S. M., Ayana, M., Dana, D., Cringoli, G., de Vlas, S. J., Fenwick, A., French, M., Kazienga, A., Keiser, J., Knopp, S., Leta, G., Matoso, L. F., Maurelli, M. P., Montresor, A., Mirams, G. & 9 others, Mekonnen, Z., Corrêa-Oliveira, R., Pinto, S. A., Rinaldi, L., Sayasone, S., Steinmann, P., Thomas, E., Vercruyse, J. & Levecke, B., 2023, In: *PLoS Neglected Tropical Diseases*. 17, 5, e0011071.

A statistical framework for calculating prospective sample sizes and classifying efficacy results for faecal egg count reduction tests in ruminants, horses and swine

Denwood, Matt, Kaplan, R. M., McKendrick, I. J., Thamsborg, Stig Milan, Nielsen, M. K. & Levecke, B., 2023, In: *Veterinary Parasitology*. 314, 109867.

Accuracy, acceptability, and feasibility of diagnostic tests for the screening of *Strongyloides stercoralis* in the field (ESTRELLA): a cross-sectional study in Ecuador

Tamarozzi, F., Guevara, Á. G., Anselmi, M., Vicuña, Y., Prandi, R., Marquez, M., Vivero, S., Robinzón Huerlo, F., Racines, M., Mazzi, C., Denwood, Matt & Buonfrate, D., 2023, In: *The Lancet Global Health*. 11, 5, p. e740-e748

Addressing misclassification bias in vaccine effectiveness studies with an application to Covid-19

Eusebi, P., Speybroeck, N., Hartnack, S., Stærk-Østergaard, J., Denwood, Matt & Kostoulas, P., 2023, In: BMC Medical Research Methodology. 23, 55.

Estimating true prevalence through questionnaire data

Mielke, Adam, Denwood, Matt & Christiansen, L. E., 2023, In: Journal of Medical Virology. 95, 7, e28908.

Identifying areas of animal welfare concern in different production stages in Danish pig herds using the Danish Animal Welfare Index (DAWIN)

Michelsen, Anne Marie, Hakansson, Franziska, Lund, Vibe Pedersen, Kirchner, M. K., Dam Otten, Nina, Denwood, Matt, Rousing, T., Houe, Hans & Forkman, Björn, 2023, In: Animal Welfare. 32, e47.

Modeling the Risk of Human Toxoplasmosis in the Danish Population From Ingestion of Tissue Cysts Present in Pork Products

Olsen, Abbey, Swart, A., Pires, S. M., Fagt, S., Houe, Hans, Denwood, Matt, Møgelmoose, V., Nielsen, H. V. & Alban, L. M., 2023, *14th International Symposium on the Epidemiology and Control of Biological, Chemical and Physical Hazards in Pigs and Pork: Proceedings*. Iowa State University Digital Press, 4 p.

The convergence epidemic volatility index (cEVI) as an alternative early warning tool for identifying waves in an epidemic

Pateras, K., Meletis, E., Denwood, Matt, Eusebi, P. & Kostoulas, P., 2023, In: Infectious Disease Modelling. 8, 2, p. 484-490 7 p.

Treatment of mild to moderate clinical bovine mastitis caused by gram-positive bacteria: A noninferiority randomized trial of local penicillin treatment alone or combined with systemic treatment

Svennesen, Line, Skarbye, Alice Puk, Farre, M., Astrup, L. B., Halasa, T., Krömker, Volker, Denwood, Matt & Kirkeby, Carsten, 2023, In: Journal of Dairy Science. 106, 8, p. 5696-5714

Use of Danish national somatic cell count data to assess the need for dry-off treatment in Holstein dairy cattle

Henningsen, Maj Beldring, Denwood, Matt, Kirkeby, Carsten & Nielsen, Søren Saxmose, 2023, In: Animals. 13, 15, 13 p., 2523.

World Association for the Advancement of Veterinary Parasitology (W.A.A.V.P.) guideline for diagnosing anthelmintic resistance using the faecal egg count reduction test in ruminants, horses and swine

Kaplan, R. M., Denwood, Matt, Nielsen, M. K., Thamsborg, Stig Milan, Torgerson, P. R., Gilleard, J. S., Dobson, R. J., Vercruyse, J. & Levecke, B., 2023, In: Veterinary Parasitology. 318, 20 p., 109936.

Transmission of SARS-CoV-2 Omicron VOC subvariants BA.1 and BA.2: Evidence from Danish Households

Lynge, Frederik Plesner, Kirkeby, Carsten, Denwood, Matt, Christiansen, L. E., Mølbak, Kåre, Møller, C. H., Skov, R. L., Krause, Tyra Grove, Rasmussen, M., Sieber, R. N., Johannesen, T. B., Lillebaek, Troels, Fonager, J., Fomsgaard, A., Møller, F. T., Stegger, M., Overvad, M., Spiess, K. & Mortensen, Laust Hvas, 30 Jan 2022, 2 p.

A new epidemiological approach to assess reductions in animal suffering through systematic control of Salmonella Dublin in a cattle sector

Nielsen, Liza Rosenbaum, Houe, Hans, Agger, Jens Frederik Gramstrup, Denwood, Matt, Dam Otten, Nina & Nielsen, Søren Saxmose, 2022, *16th International Symposium of Veterinary Epidemiology and Economics: Connecting Animals, People, and their shared environments - Abstract book*. p. 428 749

Assessing the impact of Ascariasis and Trichuriasis on weight gain using a porcine model

Whitehead, B., Thamsborg, Stig Milan, Denwood, Matt & Nejsun, P., 2022, In: PLoS Neglected Tropical Diseases. 16, 8, e0010709.

Determination of an optimal ELISA cut-off for the diagnosis of Toxoplasma gondii infection in pigs using Bayesian latent class modelling of data from multiple diagnostic tests

Olsen, Abbey, Nielsen, H. V., Alban, L., Houe, Hans, Jensen, T. B. & Denwood, Matt, 2022, In: Preventive Veterinary Medicine. 201, 105606.

Effect of vaccination on household transmission of SARS-CoV-2 Delta variant of concern

Lyngse, Frederik Plesner, Mølbak, Kåre, Denwood, Matt, Christiansen, L. E., Møller, C. H., Rasmussen, M., Cohen, A. S., Stegger, M., Fonager, J., Sieber, R. N., Ellegaard, K. M., Nielsen, C. & Kirkeby, Carsten, 2022, In: Nature Communications. 13, 1, 3764.

Estimating the true seroprevalence of Toxoplasma gondii in Danish pigs

Olsen, Abbey, Sandberg, M., Houe, Hans, Nielsen, H. V., Denwood, Matt & Alban, L. M., 2022, *16th International Symposium of Veterinary Epidemiology and Economics: Connecting Animals, People, and their shared environments - Abstract book*. p. 453 1 p. 36

Evaluation of diagnostic test procedures for SARS-CoV-2 using latent class models

Stærk-Østergaard, J., Kirkeby, Carsten, Christiansen, L. E., Andersen, M. A., Møller, C. H., Voldstedlund, M. & Denwood, Matt, 2022, In: Journal of Medical Virology. 94, 10, p. 4754-4761

Household transmission of SARS-CoV-2 Omicron variant of concern subvariants BA.1 and BA.2 in Denmark

Lyngse, Frederik Plesner, Kirkeby, Carsten, Denwood, Matt, Christiansen, L. E., Mølbak, Kåre, Holten Møller, C., Skov, R. L., Krause, Tyra Grove, Rasmussen, M., Sieber, R., Johannesen, T. B., Lillebæk, Troels, Fonager, J., Fomsgaard, A., Møller, F. T., Stegger, M., Overvad, M., Spiess, K. & Mortensen, Laust Hvas, 2022, In: Nature Communications. 13, 7 p., 5760 .

Household transmission of the SARS-CoV-2 Omicron variant in Denmark

Lyngse, Frederik Plesner, Mortensen, Laust Hvas, Denwood, Matt, Christiansen, L. E., Møller, C. H., Skov, R. L., Spiess, K., Fomsgaard, A., Lassaunière, R., Rasmussen, M., Stegger, M., Nielsen, C., Sieber, R. N., Cohen, A. S., Møller, F. T., Overvad, M., Mølbak, Kåre, Krause, Tyra Grove & Kirkeby, Carsten, 2022, In: Nature Communications. 13, 5573.

PREPAREDNESS FOR POTENTIAL FUTURE SEROLOGICAL SURVEILLANCE OF TOXOPLASMA GONDII IN THE DANISH PIG POPULATION: A REVIEW OF LATEST EPIDEMIOLOGICAL STUDIES FROM DENMARK

Olsen, Abbey, Houe, Hans, Nielsen, H. V., Denwood, Matt, Sandberg, M., Pires, S. M. & Alban, L. M., 2022, p. 173-176.

Notat om effekten af nedlukning frem til jul, den 6. december 2020

Kirkeby, Carsten & Denwood, Matt, 6 Dec 2021

Application of methods to assess animal welfare and suffering caused by infectious diseases in cattle and swine populations

Nielsen, Søren Saxmose, Houe, Hans, Denwood, Matt, Nielsen, Liza Rosenbaum, Forkman, Björn, Dam Otten, Nina & Agger, Jens Frederik Gramstrup, Nov 2021, In: Animals. 11, 11, 3017.

Ekspertrapport af den 23. oktober 2020. Incidens og fremskrivning af COVID-19 tilfælde

Kirkeby, Carsten & Denwood, Matt, 23 Oct 2021

Examples of proper reporting for evaluation (Stage 2 validation) of diagnostic tests for diseases listed by the World Organisation for Animal Health

Kostoulas, P., Gardner, I. A., Elschner, M. C., Denwood, Matt, Meletis, L. & Nielsen, Søren Saxmose, 1 Jun 2021, In: Revue Scientifique et Technique. 40, 1, p. 287-298 12 p.

Særskilt bilag af d. 3. februar til "Notat om prognoser for smittetal og indlæggelser ved scenarier for genåbning af 0.-4. klasse i grundskolen"

Kirkeby, Carsten, Denwood, Matt & Lyngse, Frederik Plesner, 3 Feb 2021

Tillægsnotat af d. 3. februar til notat af d. 31. januar 2021 om prognoser for smittetal og indlæggelser ved yderligere genåbningsscenarie

Kirkeby, Carsten, Denwood, Matt & Lyngse, Frederik Plesner, 3 Feb 2021

Notat om prognoser for smittetal og indlæggelser ved scenarier for genåbning af 0.-4. klasse i grundskolen
Kirkeby, Carsten, Denwood, Matt & Lyngse, Frederik Plesner, 1 Feb 2021

Scenarier for udviklingen i den engelske virusvariant af SARS-COV-2 (cluster B.1.1.7)
Kirkeby, Carsten & Denwood, Matt, 2 Jan 2021, 3 p.

A longitudinal study of *Toxoplasma gondii* seroconversion on four large Danish sow farms
Olsen, Abbey, Alban, L., Denwood, Matt, Houe, Hans, Birk Jensen, T. & Vedel Nielsen, H., 2021, In: Veterinary Parasitology. 295, 9 p., 109460.

Application of Methods to Assess Animal Welfare and Suffering Caused by Infectious Diseases in Cattle and Swine Populations
Nielsen, Søren Saxmose, Houe, Hans, Denwood, Matt, Nielsen, Liza Rosenbaum, Forkman, Björn, Dam Otten, Nina & Agger, Jens Frederik Gramstrup, 2021, In: Animals. 11, p. 1-20 20 p., 3017.

Association between gastric content fluidity and pars oesophageal ulcers in nursery pigs: a cross-sectional study of high-risk Danish herds using commercial feed
Peralvo Vidal, Juan Miguel, Weber, N. R., Nielsen, Jens Peter, Denwood, Matt, Haugegaard, S. & Pedersen, Anni Øyan, 2021, In: Porcine Health Management. 7, 19.

Association between milk yield and milk anti-*Fasciola hepatica* antibody levels, and the utility of bulk tank milk samples for assessing within-herd prevalence on organic dairy farms
Takeuchi-Storm, N., Thamsborg, Stig Milan, Enemark, H. L., Boes, J., Williams, D. & Denwood, Matt, 2021, In: Veterinary Parasitology. 291, 9 p., 109374.

Dynamics of somatic cell count (SCC) and differential SCC during and following intramammary infections
Kirkeby, Carsten, Schwarz, D., Denwood, Matt, Farre, M., Nielsen, Søren Saxmose, Gussmann, Maya Katrin, Toft, N. & Halasa, T., 2021, In: Journal of Dairy Science. 104, p. 3427-3438 12 p.

Effect of enhanced hygiene on transmission of *Staphylococcus aureus*, *Streptococcus agalactiae*, and *Streptococcus dysgalactiae* in dairy herds with automatic milking systems
Skarbye, Alice Puk, Krogh, M. A., Denwood, Matt, Bjerring, M. & Østergaard, S., 2021, In: Journal of Dairy Science. 104, 6, p. 7195-7209 15 p.

Electronic reporting of diagnostic laboratory test results from all healthcare sectors is a cornerstone of national preparedness and control of COVID-19 in Denmark
Schønning, Kristian, Dessau, R. B., Jensen, T. G., Thorsen, N. M., Wiuff, C., Nielsen, L., Gubbels, S., Denwood, Matt, Thygesen, U. H., Christensen, L. E., Møller, C. H., Møller, J. K., Ellermann-Eriksen, S., Østergaard, C., Lam, J. U. H., Abushalleeh, N., Meaidi, M., Olsen, S., Mølbak, Kåre & Voldstedlund, M., 2021, In: APMIS. 129, 7, p. 438-451

Estimating Clinically Relevant Cut-Off Values for a High-Throughput Quantitative Real-Time PCR Detecting Bacterial Respiratory Pathogens in Cattle
Klompaker, A. F., Brydesholt, M., Michelsen, Anne Marie, Denwood, Matt, Kirkeby, Carsten, Larsen, Lars, Goecke, Nicole Bakkegård, Dam Otten, Nina & Nielsen, Liza Rosenbaum, 2021, In: Frontiers in Veterinary Science. 8, 674771.

Evaluation of two *Fasciola hepatica* faecal egg counting protocols in sheep and cattle
Reigate, C., Williams, H. W., Denwood, Matt, Morphey, R. M., Thomas, E. R. & Brophy, P. M., 2021, In: Veterinary Parasitology. 294, 6 p., 109435.

Livestock-associated MRSA survival on house flies (*Musca domestica*) and stable flies (*Stomoxys calcitrans*) after removal from a Danish pig farm
Stelder, J. J., Kjær, Lene Jung, Jensen, L. B., Boklund, Anette, Denwood, Matt, Carlsen, M. & Bødker, René, 2021, In: Scientific Reports. 11, 3527.

Quantifying the impact of infectious diseases on animal welfare

Dam Otten, Nina, Agger, Jens Frederik Gramstrup, Denwood, Matt, Nielsen, Søren Saxmose, Nielsen, Liza Rosenbaum, Forkman, Björn & Houe, Hans, 2021, *Proceedings of the 8th International Conference on the Assessment of Animal Welfare at Farm and Group level*. Wageningen Academic Publishers, p. 132

Smittemodeller bygger på videnskab, ikke på blokpolitik

Kirkeby, Carsten, Denwood, Matt & Petersen, Troels Christian, 2021

Survey Design to Monitor Drug Efficacy for the Control of Soil-Transmitted Helminthiasis and Schistosomiasis

Coffeng, L. E., Levecke, B., Hattendorf, J., Walker, M. & Denwood, Matt, 2021, In: *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 72, 3, p. S195-S202

The epidemic volatility index, a novel early warning tool for identifying new waves in an epidemic

Kostoulas, P., Meletis, E., Pateras, K., Eusebi, P., Kostoulas, T., Furuya-Kanamori, L., Speybroeck, N., Denwood, Matt, Doi, S. A. R., Althaus, C. L., Kirkeby, Carsten, Rohani, P., Dhand, N. K., Peñalvo, J. L., Thabane, L., BenMiled, S., Sharifi, H. & Walter, S. D., 2021, In: *Scientific Reports*. 11, 1, 23775.

Derfor kan eksperter i dyresygdomme forudsige, hvordan coronavirus spreder sig

Kirkeby, Carsten, Denwood, Matt & Halasa, T., 5 Dec 2020, In: *videnskab.dk*.

Effects of intra-articular administration of lidocaine, mepivacaine, and the preservative methyl parahydroxybenzoate on synovial fluid biomarkers of horses

Adler, Ditte Marie Top, Serteyn, D., Franck, T., Jørgensen, Elin, Christophersen, M. T., Denwood, Matt & Verwilghen, D. R., Jun 2020, In: *American Journal of Veterinary Research*. 81, 6, p. 479-487 9 p.

A weak point analysis of welfare in Danish dairy herds using two different welfare assessment systems

Dam Otten, Nina, Rousing, T., Oliveira, V. H. S. D., reiten, M., Michelsen, Anne Marie, Hakansson, Franziska, Lund, Vibe Pedersen, Houe, Hans, Denwood, Matt, Sørensen, J. T., Forkman, Björn & Kirchner, M., 2020, In: *Animal Welfare*. 29, p. 197-207 11 p.

Between roost contact is essential for maintenance of European bat lyssavirus type-2 in *Myotis daubentonii* bat reservoir: 'The Swarming Hypothesis'

Horton, D. L., Breed, A. C., Arnold, M. E., Smith, G. C., Aegerter, J. N., McElhinney, L. M., Johnson, N., Banyard, A. C., Raynor, R., Mackie, I., Denwood, Matt, Mellor, D. J., Swift, S., Racey, P. A. & Fooks, A. R., 2020, In: *Scientific Reports*. 10, 1, 1740.

Combining Salmonella Dublin genome information and contact-tracing to substantiate a new approach for improved detection of infectious transmission routes in cattle populations

de Knegt, Leonardo Victor, Kudirkiene, E., Rattenborg, E., Sørensen, G., Denwood, Matt, Olsen, John Elmerdahl & Nielsen, Liza Rosenbaum, 2020, In: *Preventive Veterinary Medicine*. 181, 104531 p.

Contrasting effects of high-starch and high-sugar diets on ruminal function in cattle

Francesio, A., Viora, L., Denwood, Matt, Tulley, W., Brady, N., Hastie, P., Hamilton, A., Davison, C., Michie, C. & Jonsson, N. N., 2020, In: *Journal of Dairy Research*. 87, 2, p. 175-183 9 p.

Ekspertrapport af den 16. april 2020. Matematisk modellering af COVID-19 smittespredning og sygehusbelastning ved scenarier for yderligere initiativer i Fase 1 af genåbningen

Kirkeby, Carsten, Halasa, T. & Denwood, Matt, 2020

Ekspertrapport af den 2. april. Matematisk modellering af COVID-19 smittespredning og sygehusbelastning ved scenarier for delvis genåbning af Danmark

Kirkeby, Carsten, Denwood, Matt & Halasa, T., 2020, 24 p.

Ekspertrapport af den 6. april 2020 - Matematisk modellering af COVID-19 smittespredning og sygehusbelastning ved scenarie for delvis genåbning af Danmark

Kirkeby, Carsten, Denwood, Matt & Halasa, T., 2020

Ekspertrapport af den 6. maj 2020. Matematisk modellering af COVID-19 smittespredning og sygehusbelastning ved scenarier for anden fase af genåbningen af Danmark

Kirkeby, Carsten, Denwood, Matt, Halasa, T. & Lyngse, Frederik Plesner, 2020

Practical and effective diagnosis of animal anthrax in endemic low-resource settings

Aminu, O. R., Lembo, T., Zadoks, R. N., Biek, R., Lewis, S., Kiwelu, I., Mmbaga, B. T., Mshanga, D., Shirima, G., Denwood, Matt & Forde, T. L., 2020, In: *P L o S Neglected Tropical Diseases*. 14, 9, 17 p., e0008655.

Prediction Models in Veterinary and Human Epidemiology: Our Experience With Modeling Sars-CoV-2 Spread

Halasa, T., Græsbøll, K., Denwood, Matt, Christensen, L. E. & Kirkeby, Carsten, 2020, In: *Frontiers in Veterinary Science*. 7, 513.

Seroprevalence of *Toxoplasma gondii* infection in sows and finishers from conventional and organic herds in Denmark: implications for potential future serological surveillance

Olsen, Abbey, Sandberg, M., Houe, Hans, Nielsen, H. V., Denwood, Matt, Jensen, T. B. & Alban, L., 2020, In: *Preventive Veterinary Medicine*. 185, 10 p., 105149.

Teknisk gennemgang af modellerne

Kirkeby, Carsten, Denwood, Matt & Halasa, T., 2020

The effect of age when group housed and other management factors on playing and non-nutritive sucking behaviour in dairy calves: a cross sectional observational study

Reipurth, M., Klausen, S. K., Denwood, Matt, Forkman, Björn & Houe, Hans, 2020, In: *Acta Veterinaria Scandinavica*. 62, 1, 63.

Tillægsrapport af den 13. maj 2020 til ekspertrapport af 6. maj 2020. Matematisk modellering af COVID-19 smittespredning og sygehusbelastning – beregning af anden fase af genåbningen af Danmark

Kirkeby, Carsten, Halasa, T., Denwood, Matt & Lyngse, Frederik Plesner, 2020

Tillægsrapport af den 20. maj 2020 til ekspertrapporten af den 6. maj 2020 og i forlængelse af tillægsrapporten af den 13. maj. Matematisk modellering af COVID-19 smittespredning og sygehusbelastning – beregning af en udvidelse af anden fase af genåbningen af Danmark

Kirkeby, Carsten, Denwood, Matt, Halasa, T. & Lyngse, Frederik Plesner, 2020

Tillægsrapport af den 4. april 2020 til ekspertrapport af den 2. april 2020 vedr. matematisk modellering af COVID19 smittespredning og sygehusbelastning ved scenarier for delvis genåbning af Danmark

Kirkeby, Carsten, Denwood, Matt & Halasa, T., 2020

Uptake of Diagnostic Tests by Livestock Farmers: A Stochastic Game Theory Approach

Mohr, S., Beard, R., Nisbet, A. J., Burgess, S. T. G., Reeve, R., Denwood, Matt, Porphyre, T., Zadoks, R. N. & Matthews, L., 2020, In: *Frontiers in Veterinary Science*. 7, 36.

Bayesian estimation of herd-level prevalence and risk factors associated with BoHV-1 infection in cattle herds in the State of Paraíba, Brazil

Fernandes, L. G., Denwood, Matt, de Sousa Américo Batista Santos, C., Alves, C. J., Pituco, E. M., de Campos Nogueira Romaldini, A. H., De Stefano, E., Nielsen, Søren Saxmose & de Azevedo, S. S., 1 Aug 2019, In: *Preventive Veterinary Medicine*. 169, 7 p., 104705.

Associations between udder health and culling in dairy cows

Gussmann, Maya Katrin, Denwood, Matt, Kirkeby, Carsten, Farre, M. & Halasa, T., 2019, In: *Preventive Veterinary Medicine*. 171, 104751.

Evaluation of reticularuminal pH measurements from individual cattle: Sampling strategies for the assessment of herd status

Jonsson, N. N., Kleen, J. L., Wallace, R. J., Andonovic, I., Michie, C., Farish, M., Mitchell, M., Duthie, C. A., Jensen, Dan Børge & Denwood, Matt, 2019, In: *Veterinary Journal*. 243, p. 26-32 7 p.

Impact of selected infectious diseases on animal welfare: a review in progress

Agger, Jens Frederik Gramstrup, Nielsen, Søren Saxmose, Dam Otten, Nina, Denwood, Matt, Forkman, Björn, Nielsen, Liza Rosenbaum & Houe, Hans, 2019. 1 p.

A longitudinal observational study of the dynamics of *Mycoplasma bovis* antibodies in naturally exposed and diseased dairy cows

Petersen, Mette Bisgaard, Kristensen, Jeanette, Holm, D. L., Denwood, Matt & Nielsen, Liza Rosenbaum, 1 Aug 2018, In: *Journal of Dairy Science*. 101, 8, p. 7383-7396 14 p.

Field evaluation of anticoccidial efficacy: A novel approach demonstrates reduced efficacy of toltrazuril against ovine *Eimeria* spp. in Norway

Odden, A., Denwood, Matt, Stuen, S., Robertson, L. J., Ruiz, A., Hamnes, I. S., Hektoen, L. & Enemark, H. L., 1 Aug 2018, In: *International Journal for Parasitology: Drugs and Drug Resistance*. 8, 2, p. 304-311 8 p.

Pen-level risk factors associated with tail lesions in Danish weaner pigs: a crosssectional study

Hakansson, Franziska, Michelsen, Anne Marie, Lund, Vibe Pedersen, Kirchner, M., Dam Otten, Nina, Denwood, Matt & Forkman, Björn, Aug 2018, *Proceedings of the 52nd Congress of the International Society of Applied Ethology*. p. 211 1 p.

Ny testmetode kan redde danske malkekøer

Petersen, Mette Bisgaard, Nielsen, Liza Rosenbaum & Denwood, Matt, Jun 2018, In: *videnskab.dk*. p. 1

***Mycoplasma bovis* antibody dynamics in naturally exposed dairy calves according to two diagnostic tests**

Petersen, Mette Bisgaard, Wawegama, N. K., Denwood, Matt, Markham, P. F., Browning, G. F. & Nielsen, Liza Rosenbaum, 2018, In: *BMC Veterinary Research*. 14, 1, 10 p., 258.

Breeding Blues: an ethical evaluation of the plan to reduce calving difficulties in Danish Blue cattle

Sandøe, Peter, Theut, L. F. & Denwood, Matt, 2018, *Professionals in food chains: EurSafe 2018*. Springer, S. & Grimm, H. (eds.). Wageningen Academic Publishers, p. 134-140 7 p.

Describing temporal variation in reticulorumen pH using continuous monitoring data

Denwood, Matt, Kleen, J. L., Jensen, Dan Børge & Jonsson, N. N., 2018, In: *Journal of Dairy Science*. 101, 1, p. 233-245 13 p.

Patterns of *Fasciola hepatica* infection in Danish dairy cattle: implications for on-farm control of the parasite based on different diagnostic methods

Takeuchi-Storm, N., Denwood, Matt, Petersen, H. H., Enemark, H. L., Stensgaard, Anna-Sofie, Sengupta, Mita Eva, Beesley, N. J., Hodgkinson, J., Williams, D. & Thamsborg, Stig Milan, 2018, In: *Parasites & Vectors*. 11, 18 p., 674.

Selection of Meat Inspection Data for an Animal Welfare Index in Cattle and Pigs in Denmark

Nielsen, Søren Saxmose, Denwood, Matt, Forkman, Björn & Houe, Hans, 6 Dec 2017, In: *Animals - Open Access Journal*. 7, 2, 20 p., 94.

Should the contribution of one additional lame cow depend on how many other cows on the farm are lame?

Sandøe, Peter, Forkman, Björn, Hakansson, Franziska, Andreasen, S. N., Nøhr, R., Denwood, Matt & Lund, Thomas Bøker, Dec 2017, In: *Animals*. 7, 12, 13 p., 96.

Associations between antibacterial treatment and the prevalence of tail-biting-related sequelae in Danish finishers at slaughter

Fertner, M., Denwood, Matt, Birkegård, A. C., Stege, Helle & Boklund, Anette, Nov 2017, In: *Frontiers in Veterinary Science*. 4, 8 p., 182.

Farm-level risk factors for *Fasciola hepatica* infection in Danish dairy cattle as evaluated by two diagnostic methods

Takeuchi-Storm, N., Denwood, Matt, Hansen, Tina Vicky Alstrup, Halasa, T., Rattenborg, E., Boes, J., Enemark, H. L. & Thamsborg, Stig Milan, Nov 2017, In: *Parasites and Vectors*. 10, 11 p., 555.

To what extent do experts agree? A study of perceived validity of animal welfare indicators

Sandøe, Peter, Forkman, Björn, Nøhr, R., Denwood, Matt & Lund, Thomas Bøker, Jun 2017, *Measuring Animal Welfare and Applying Scientific Advances: Why Is It Still So Difficult?*. Wheathampstead, UK: Universities Federation for Animal Welfare, p. 32 1 p.

Batch medication of intestinal infections in nursery pigs: A randomised clinical trial on the efficacy of treatment strategy, type of antibiotic and bacterial load on average daily weight gain

Weber, N. R., Pedersen, Ken Steen, Hansen, C. F., Denwood, Matt, Hjulsgager, C. K. & Nielsen, Jens Peter, 1 Feb 2017, In: *Preventive Veterinary Medicine*. 137, Part A, p. 69-76 8 p.

Genotype variation and genetic relationship among *Escherichia coli* from nursery pigs located in different pens in the same farm

Herrero-Fresno, A., Ahmed, S., Hansen, M. H., Denwood, Matt, Zachariasen, C. & Olsen, John Elmerdahl, 5 Jan 2017, In: *BMC Microbiology*. 17, 10 p., 5.

***Mycoplasma bovis* antibodies in a longitudinal outbreak study**

Petersen, Mette Bisgaard, Holm, D. L., Kristensen, Jeanette, Denwood, Matt & Nielsen, Liza Rosenbaum, 2017. 1 p.

A simple and robust statistical framework for planning, analysing and interpreting faecal egg count reduction test (FECRT) studies

Denwood, Matt, McKendrick, I. J., Matthews, L., Prentice, J. C., Reid, S. W. J. & Innocent, G. T., 2017.

Animal welfare in Danish pig herds

Forkman, Björn, Dam Otten, Nina, Reiten, M., Michelsen, Anne Marie, Hakansson, Franziska, Lund, Vibe Pedersen, Kirchner, M., Denwood, Matt, Rousing, T., Houe, Hans & Sørensen, J. T., 2017, *Proceedings of the 7th international conference on the assessment of animal welfare at farm and group level*. Wageningen Academic Publishers, p. 193 1 p.

Comparison of antimicrobial resistance in *E. coli* isolated from rectal and floor samples in pens with diarrhoeic nursery pigs in Denmark

Weber, N. R., Nielsen, Jens Peter, Jorsal, S. E. L., Haugegaard, S., Denwood, Matt & Pedersen, Ken Steen, 2017, In: *Preventive Veterinary Medicine*. 147, p. 42-49 8 p.

Effect of oral meloxicam in loose-housed farrowing sows

Michelsen, Anne Marie, Hakansson, Franziska, Denwood, Matt & Forkman, Björn, 2017. 1 p.

Effect of vaccination against sub-clinical Porcine Circovirus type 2 infection in a high-health finishing pig herd: A randomised clinical field trial

Nielsen, G. B., Nielsen, Jens Peter, Haugegaard, J., Denwood, Matt & Houe, Hans, 2017, In: *Preventive Veterinary Medicine*. 141, p. 14-21 8 p.

Estimating the prevalence and intensity of *Schistosoma mansoni* infection among rural communities in Western Tanzania: The influence of sampling strategy and statistical approach

Bakuza, J. S., Denwood, Matt, Nkwengulila, G. & Mable, B. K., 2017, In: *PLOS Neglected Tropical Diseases*. 11, 9, 19 p., e0005937.

Identification of areas with poor welfare in Danish dairy herds

Dam Otten, Nina, Silva de Oliveira, V. H., Reiten, M., Michelsen, Anne Marie, Hakansson, Franziska, Lund, Vibe Pedersen, Kirchner, M., Denwood, Matt, Rousing, T., Forkman, Björn, Houe, Hans & Sørensen, J. T., 2017. 1 p.

Investing in cow-welfare - a cost-effective initiative?

Kudahl, A. B., Kirchner, M., Denwood, Matt, Houe, Hans, Forkman, Björn, Nielsen, Søren Saxmose, Østergaard, S. & Sørensen, J. T., 2017, *Joint DCAW and NordCAW : Animal Welfare Conference*. p. 12 1 p.

Pathway of oxfendazole from the host into the worm: *Trichuris suis* in pigs

Hansen, Tina Vicky Alstrup, Williams, Andrew Richard, Denwood, Matt, Nejsum, P., Thamsborg, Stig Milan & Friis, C., 2017, In: International Journal for Parasitology: Drugs and Drug Resistance. 7, 3, p. 416-424 9 p.

Risk factors Associated with skin and vulva lesions in loose-housed gestating sows and gilts in Denmark

Lund, Vibe Pedersen, Michelsen, Anne Marie, Hakansson, Franziska, Kirchner, M., Dam Otten, Nina, Denwood, Matt & Forkman, Björn, 2017. 1 p.

Risk factors associated with skin and vulva lesions in Danish loose-housed gestating sows and gilts

Lund, Vibe Pedersen, Michelsen, Anne Marie, Hakansson, Franziska, Kirchner, M., Dam Otten, Nina, Denwood, Matt & Forkman, Björn, 2017, *Proceedings of the 7th International Conference on the Assessment of Animal Welfare at Farm and Group Level*. Wageningen Academic Publishers, p. 139 1 p.

Selection of meat inspection data for animal welfare index

Nielsen, Søren Saxmose, Denwood, Matt & Houe, Hans, 2017, *Proceedings of the 7th international conference of the assessment of animal welfare at farm and group level*. Wageningen Academic Publishers, p. 136 1 p.

Should the contribution of one more lame cow depend on how many other cows on the farm are lame?

Sandøe, Peter, Lund, Thomas Bøker, Forkman, Björn & Denwood, Matt, 2017, *WAFL 2017: Proceedings of the 7th International Conference on the Assessment of Animal Welfare at Farm and Group Level*. De Jong, I. C. & Koene, P. (eds.). p. 103 1 p.

Efficacy of ivermectin against gastrointestinal nematodes of cattle in Denmark evaluated by different methods for analysis of faecal egg count reduction

Peña-Espinoza, M., Thamsborg, Stig Milan, Denwood, Matt, Drag, Markus Hodal, Hansen, Tina Vicky Alstrup, Jensen, V. F. & Enemark, H. L., Dec 2016, In: International Journal for Parasitology: Drugs and Drug Resistance. 6, 3, p. 241-250 10 p.

Glucose Absorption by the Bacillary Band of *Trichuris muris*

Hansen, Tina Vicky Alstrup, Hansen, M., Nejsum, P., Mejer, Helena, Denwood, Matt & Thamsborg, Stig Milan, 2 Sep 2016, In: PLoS Neglected Tropical Diseases . 10, 9, 22 p., 0004971.

Equine Cyathostominae can develop to infective third-stage larvae on straw bedding

Love, S., Burden, F. A., McGirr, E. C., Gordon, L. & Denwood, Matt, 31 Aug 2016, In: Parasites & Vectors. 9, 7 p., 478.

Glucose absorption by the bacillary band of *Trichuris muris*

Hansen, Tina Vicky Alstrup, Denwood, Matt, Nejsum, P., Thamsborg, Stig Milan, Hansen, M. & Mejer, Helena, 1 Apr 2016.

Identification of Problem Areas for poor Animal Welfare State in Danish Dairy Cow Herds: an update

Kirchner, M., Denwood, Matt, Forkman, Björn, Hakansson, Franziska, Houe, Hans, Kudahl, A. B., Michelsen, Anne Marie, Dam Otten, Nina, Lund, Vibe Pedersen, Rousing, T. & Sørensen, J. T., 2016. 1 p.

Identification of risk factors and cost effective interventions for promoting animal welfare in Danish dairy herds

Kudahl, A. B., Sørensen, J. T., Østergaard, S., Kirchner, M., Denwood, Matt, Forkman, Björn, Nielsen, Søren Saxmose & Houe, Hans, 2016. 1 p.

Lavere pattegrisdødelighed ved smertelindring af løse, færende søer

Michelsen, Anne Marie, Hakansson, Franziska, Denwood, Matt & Forkman, Björn, 2016. 1 p.

The construction of a Danish National Animal Welfare Index.

Forkman, Björn, Holm, L., Sørensen, J. T., Rousing, T., Kirchner, M., Dam Otten, Nina, Michelsen, Anne Marie, Lund, Vibe Pedersen, Hakansson, Franziska, Denwood, Matt & Houe, Hans, 2016. 1 p.

Variation in individual antibody response to *Mycoplasma bovis*

Petersen, Mette Bisgaard, Denwood, Matt & Nielsen, Liza Rosenbaum, 2016. 1 p.

Vurdering af dyrs transportegnethed

Herskin, M. S., Dahl-Pedersen, Kirstin, Denwood, Matt, Fogsgaard, K. K., Forkman, Björn, Gaillard, C., Houe, Hans, Lund, Vibe Pedersen, Nielsen, Liza Rosenbaum, Dam Otten, Nina, Thodberg, K. & Thomsen, P. T., 2016, DCA - Nationalt Center for Jordbrug og Fødevarer. 122 p.

runjags: an R package providing interface utilities, model templates, parallel computing methods and additional distributions for MCMC models in JAGS

Denwood, Matt, 2016, In: Journal of Statistical Software. 71, 9, p. 1-25 25 p.

Anthelmintic resistance to ivermectin and moxidectin in gastrointestinal nematodes of cattle in Europe

Geurden, T., Chartier, C., Fanke, J., di Regalbono, A. F., Traversa, D., von Samson-Himmelstjerna, G., Demeler, J., Vanimisetti, H. B., Bartram, D. J. & Denwood, Matt, Dec 2015, In: International Journal for Parasitology: Drugs and Drug Resistance. 5, 3, p. 163-171 9 p.

Comparison of etorphine-acepromazine and medetomidine-ketamine anesthesia in captive impala (*Aepyceros melampus*)

Perrin, K. L., Denwood, Matt, Grøndahl, C., Nissen, P. & Bertelsen, Mads Frost, Dec 2015, In: Journal of Zoo and Wildlife Medicine. 46, 4, p. 870-879 10 p.

Efficacy of selected anthelmintic drugs against cyathostomins in horses in the federal state of Brandenburg, Germany

Fischer, J. K., Hinney, B., Denwood, Matt, Traversa, D., von Samson-Himmelstjerna, G. & Clausen, P., Dec 2015, In: Parasitology Research. 114, 12, p. 4441-4450 10 p.

A Bayesian generalized random regression model for estimating heritability using overdispersed count data

Mair, C., Stear, M., Johnson, P., Denwood, Matt, de Cisneros, J. P. J., Stefan, T. & Matthews, L., 20 Jun 2015, In: Genetics Selection Evolution (Online). 47, 13 p., 51.

Use of register data to assess animal welfare

Houe, Hans, Nielsen, Søren Saxmose, Denwood, Matt, Rousing, T., Sørensen, J. T. & Forkman, Björn, Apr 2015, *Improving Pig Welfare - what are the ways forward?: International conference on pig welfare*. Ministeriet for Fødevarer, Landbrug og Fiskeri, p. 42-45 4 p.

Random effect selection in generalised linear models: a practical application to slaughterhouse surveillance data in Denmark

Denwood, Matt, Houe, Hans, Forkman, Björn & Nielsen, Søren Saxmose, 26 Mar 2015. 11 p.

Comparison of two oestrus synchronisation protocols administered to dairy cows during routine reproduction services

Viora, L., Denwood, Matt, Ellis, K., Carmichael, M. M. & Geraghty, T., Jan 2015, In: Cattle Practice. 23, 1, p. 33-38 6 p.

An invasive mammal (the gray squirrel, *Sciurus carolinensis*) commonly hosts diverse and atypical genotypes of the zoonotic pathogen *Borrelia burgdorferi sensu lato*

Millins, C., Magierecka, A., Gilbert, L., Edoff, A., Brereton, A., Kilbride, E., Denwood, Matt, Birtles, R. & Biek, R., 2015, In: Applied and Environmental Microbiology. 81, 13, p. 4236-4245 10 p.

Comparison of recording of pericarditis and lung disorders at routine meat inspection with findings at systematic health monitoring in Danish finisher pigs

Nielsen, Søren Saxmose, Nielsen, G. B., Denwood, Matt, Haugegaard, J. & Houe, Hans, 2015, In: Acta Veterinaria Scandinavica (Online). 57, 8 p., 18.

Evaluation of register data for assessment of animal welfare in cattle and pig herds using a combination of qualitative and quantitative methods

Houe, Hans, Nielsen, Søren Saxmose, Denwood, Matt, Dam Otten, Nina, Rousing, T., Sørensen, J. T. & Forkman, Björn, 2015, *Proceedings of the 14th International Symposium on Veterinary Epidemiology and Economics*. 1 p. 379

The aggregation procedure of welfare measures - a comparison between the Danish Animal Welfare Index and the Welfare Quality System

Kirchner, M., Forkman, Björn, Denwood, Matt, Nielsen, Søren Saxmose, Dam Otten, Nina, Rousing, T., Sørensen, J. T. & Houe, Hans, 2015. 1 p.

Coxiella burnetii (Q-Fever) Seroprevalence in Prey and Predators in the United Kingdom: Evaluation of Infection in Wild Rodents, Foxes and Domestic Cats Using a Modified ELISA

Meredith, A. L., Cleaveland, S. C., Denwood, Matt, Brown, J. K. & Shaw, D. J., 31 Jan 2014, In: *Transboundary and Emerging Diseases*.

The effectiveness of faecal removal methods of pasture management to control the cyathostomin burden of donkeys.

Corbett, C. J., Love, S., Moore, A., Burden, F. A., Matthews, J. B., Denwood, M. J. & Denwood, Matt, Jan 2014, In: *Parasites & Vectors*. 7, 1, p. 48 1 p.

Addressing sustainable sheep farming: Application of a targeted selective treatment approach for anthelmintic use on a commercial farm

Busin, V., Kenyon, F., Laing, N., Denwood, Matt, McBean, D., Sargison, N. D. & Ellis, K., 2013, *Small Ruminant Research*. p. 100-103 4 p.

Quantifying the sources of variability in equine faecal egg counts: implications for improving the utility of the method

Denwood, Matt, Love, S., Innocent, G. T., Matthews, L., McKendrick, I. J., Hillary, N., Smith, A. & Reid, S. W. J., 13 Aug 2012, In: *Veterinary Parasitology*. 188, 1-2, p. 120-6 7 p.

An ecological approach to assessing the epidemiology of antimicrobial resistance in animal and human populations

Mather, A. E., Matthews, L., Mellor, D. J., Reeve, R., Denwood, Matt, Boerlin, P., Reid-Smith, R. J., Brown, D. J., Coia, J. E., Browning, L. M., Haydon, D. T. & Reid, S. W. J., 22 Apr 2012, In: *Proceedings. Biological sciences / The Royal Society*. 279, 1733, p. 1630-9 10 p.

The diversity of antimicrobial resistance is different in Salmonella Typhimurium DT104 from co-located animals and humans

Mather, A. E., Matthews, L., Mellor, D. J., Reeve, R., Denwood, Matt, Boerlin, P., Reid-Smith, R. J., Brown, D. J., Coia, J. E., Browning, L. M., Haydon, D. T. & Reid, S. W. J., 1 Jan 2012, In: *Proceedings of the Royal Society B: Biological Sciences*. 279, 1740, p. 2924-2925 2 p.

From phenotype to genotype: a Bayesian solution

Denwood, Matt, Mather, A. E., Haydon, D. T., Matthews, L., Mellor, D. J. & Reid, S. W. J., 7 May 2011, In: *Proceedings. Biological sciences / The Royal Society*. 278, 1710, p. 1434-40 7 p.

Assessing the probability of acquisition of methicillin-resistant Staphylococcus aureus (MRSA) in a dog using a nested stochastic simulation model and logistic regression sensitivity analysis

Heller, J., Innocent, G. T., Denwood, Matt, Reid, S. W. J., Kelly, L. & Mellor, D. J., 1 May 2011, In: *Preventive Veterinary Medicine*. 99, 2-4, p. 211-24 14 p.

The prevalences of Salmonella Genomic Island 1 variants in human and animal Salmonella Typhimurium DT104 are distinguishable using a Bayesian approach

Mather, A. E., Denwood, Matt, Haydon, D. T., Matthews, L., Mellor, D. J., Coia, J. E., Brown, D. J. & Reid, S. W. J., 2011, In: *PLOS ONE*. 6, 11, p. e27220

Associations between the presence of virulence determinants and the epidemiology and ecology of zoonotic Escherichia coli

O'Reilly, K. M., Low, J. C., Denwood, Matt, Gally, D. L., Evans, J., Gunn, G. J., Mellor, D. J., Reid, S. W. J. & Matthews, L., Dec 2010, In: *Applied and Environmental Microbiology*. 76, 24, p. 8110-6 7 p.

Comparison of three alternative methods for analysis of equine Faecal Egg Count Reduction Test data

Denwood, Matt, Reid, S. W. J., Love, S., Nielsen, M. K., Matthews, L., McKendrick, I. J. & Innocent, G. T., 1 Mar 2010, In: Preventive Veterinary Medicine. 93, 4, p. 316-323

Development and evaluation of an online computer-aided learning (CAL) package to promote small-animal welfare

Denwood, Matt, Dale, V. H. M. & Yam, P., 2008, In: Journal of Veterinary Medical Education. 35, 2, p. 318-24 7 p.

The distribution of the pathogenic nematode *Nematodirus battus* in lambs is zero-inflated

Denwood, Matt, Stear, M. J., Matthews, L., Reid, S. W. J., Toft, N. & Innocent, G. T., 2008, In: Parasitology. 135, 10, p. 1225-35 11 p.