The Small Animal Veterinary Surveillance Network
University of Liverpool

SAVSNET Sponsors Report for AWF

The Animal Welfare Foundation has sponsored SAVSNET's activity from 1st May 2016 for one year by kindly donating £5,000. This money has been used to support the SAVSNET core team, consisting of a Project Coordinator, Programmer, Epidemiologist and Administrator and allowing the team to continue developing SAVSNET as a veterinary health informatics research resource.

Summary of SAVSNET activity 2016 - 2017

This report provides the AWF trustees with an overview of the work SAVSNET has completed in the year of sponsorship. This year has seen two new members of staff join the team, two new international collaborations set up, 15 research projects started, four scientific papers published, seven conference presentations delivered and two new exciting public engagement opportunities. In all of our activities, SAVSNET has proudly acknowledged the support of AWF.

New overseas collaborations

The UK was one of the first to recognise the potential of health informatics research in companion animals, driven largely by the well-developed companion animal sector in the UK. Individual programmes of work are now being developed in other countries. However, the real power of Health Informatics comes when data are linked together. This year has been particularly exciting for SAVSNET as two new international collaborations have been proposed with a consortium in Sweden and with the University of Minnesota.

The consortium in Sweden is made up of the National Veterinary Institute (SVA), the Swedish University of Agricultural Sciences (SLU) and the Swedish association of Professional Veterinary Clinics (SLA-Svensk Djursjukvård). These organisations have come together to set up Naveda, the Swedish surveillance system. SAVSNET will be collaborating with these partners to look to work on shared projects with combined student projects over the next three years, providing unique research opportunities for those working in Veterinary Health Informatics.

The College of Veterinary Medicine at the University of Minnesota has submitted a concept note to the Centre for Disease Control for funding to support a two year pilot of 'SAVSNET USA'. Researchers at the University of Minnesota recognise that there is very limited small animal surveillance in the USA and appreciate the value of the work being completed by SAVSNET.

Both collaborations represent the international interest in the work SAVSNET does and are potentially hugely beneficial to SAVSNET as they would provide valuable insight into the health and welfare of animals in different countries.

Research projects in progress

Listed below are research projects either completed or currently in progress in the period of AWF funding. These are being completed by undergraduate students, residents at University of Liverpool and University of Bristol and veterinary surgeons working in practice. In addition to those listed below, SAVSNET currently has three projects with commercial companies and a charity, one which is in progress and two which are proceeding through the course of project registration with the University of Liverpool; the commercial projects are one way we can sustain SAVSNET in the future.

- Tick borne disease recorded in practice and laboratory datasets
- Clinical signs and syndromes associated with brachycephalic conformation
- Spatio-temporal distribution of infections with Toxoplasma gondii in the UK
- Management of canine urinary incontinence
- Developing a tool for practitioners to better assess and manage trauma patients
- Fly strike in rabbits – risk factors, management and welfare implications
- The appearance of cases of hyperadrenocortisism
- Demographics and reasons for euthanasia in general practice
- Demographics for raw feeding in UK dogs
- Canine aggression - treatment and advice in first opinion practice
- Cranial cruciate ligament injury in the dog – demographics and treatment
- Canine demodectic and sarcoptic mange - treatments, outcomes, and risk factors
- Description of non-accidental injury
- Description of FeLV/FIP and associated risk factors
- NT-proBNP measurement in accordance with published recommendations

Public engagement opportunities

Edinburgh International Science Festival

SAVSNET introduced members of the public attending the Edinburgh International Science Festival to a new area of science called Health Informatics, which reuses electronic health records for research and surveillance. Specifically, we showcased the power of health informatics research using anonymised data collected from a large sentinel network of veterinary practitioners taking part in SAVSNET. The data specifically addressed "One Health" issues, including leading research on ticks. We showed how data is collected, and what type of data is collected. We created age appropriate opportunities for members of the public to interact with real data, interpret it and present their results. These ranged from using stickers of cats and dogs to build a histogram and involving members of the public in text mining, a methodology to extract clinical meaning from free text, to create a map of a particular disease – for example ticks. The latter required electronic tablet devices and an online map tool to allow results to be presented. Over the course of the week, this science was built up into a meaningful piece of real research that could perhaps contribute to a publication.

The histogram created over the festival by children who counted the number of ticks recorded in real veterinary consultations and organised them by species and month. In addition to exercising the children's mathematical ability, this was a great way to allow them to gain experience of Big Data.

This map was created by children who plotted the location of where ticks were recorded in the UK after reading and coding real veterinary consultations. Again another way for older children to use both maths and geography, and encourage them to draw conclusions from the data such as why there may be more ticks recorded in the South of the UK.

And finally, our fluffy friends who helped us teach children how to check pets for ticks. Small ticks which were handmade by one of the Principal Investigators were hidden in the fur of these toys and children were tasked with finding them.

SAVSNET Summer School

Plans for the very first SAVSNET summer school are underway, providing enthusiastic A-Level students with the opportunity to experience Veterinary Health Informatics research in a University environment. This concept is based on our previous experience of providing successful students with the opportunity to complete short research projects using SAVSNET data. This year, SAVSNET will welcome students who have applied to the Nuffield Foundation and the Universities Federation for Animal Welfare. The students will work as part of the SAVSNET team to gain valuable skills in Big Data analysis which are transferable to many future careers.

Projects to be completed as part of the SAVSNET summer school include:

- Risk factors for obesity in companion animals to help improve their health and welfare
- Incidence of fleas with a focus on seasonality to help promote effective flea prevention
- Airgun pellet injuries: risk factors for companion animals

Papers published acknowledging AWF support

D.A Singleton, F Sánchez-Vizcaíno, S. Dawson, P.H. Jones, P.J.M Noble, G.L. Pinchbeck, N.J. Williams and A.D. Radford. (2017) Patterns of antimicrobial agent prescription in a sentinel population of canine and feline veterinary practices in the United Kingdom. The Veterinary Journal. In Press. Available here

J. S. P. Tulloch, L. McGinley, F. Sánchez-Vizcaíno, J. M. Medlock and A. D. Radford. (2017) The passive surveillance of ticks using companion animal electronic health records. Epidemiology and Infection. Available here

F Sánchez-Vizcaíno, D. Singleton, P. Jones, B. Heayns, M. Wardeh, A. Radford, V. Schmidt, S. Dawson, P.J. Noble, S. Everitt. (2016) Small animal disease surveillance: pruritus and coagulase-positive staphylococci. The Veterinary Record. 179 352-355. Available here

F Sánchez-Vizcaíno, M. Wardeh, B. Heayns, D.A. Singleton, J.S.P Tulloch, L. McGinley, J. Newman, P.J. Noble, M.J. Day, P.H. Jones and A. Radford. (2016) Canine babesiosis and tick activity monitored using companion animal electronic health records in the UK. The Veterinary Record 179 358. Available here

Presentations given acknowledging AWF support

A. Radford. (2017) Real-time syndromic surveillance in companion animals; integrating electronic health records to provide one health messaging and feedback loops to practice. 3rd International Conference of Companion Animal Health Surveillance, 30th – 4th April 2017. Rotorua, New Zealand

D.A Singleton, F Sánchez-Vizcaíno, S. Dawson, P.H. Jones, P.J.M Noble, G.L. Pinchbeck, N.J. Williams and A.D. Radford. (2017) Network visualisation of UK companion animal pharmacosurveillance, with focus on systemic antibacterials. 3rd International Conference of Companion Animal Health Surveillance, 30th – 4th April 2017. Rotorua, New Zealand

S. Paterson, B. Heayns, S Everitt. (2017) Evidence based medicine in practice and how SAVSNET can help: Risk factors for *Pseudomonas otitis*. British Small Animal Veterinary Association Congress, 6th – 9th April 2017. Birmingham, UK.

A. Jackson, J. Newman and P.J. Noble (2017) Can an automated faecal classifier be used to identify and grade severity of diarrhoea from veterinary clinical narratives? British Small Animal Veterinary Association Congress, 6th – 9th April 2017. Birmingham, UK.

E. King and D. Singleton (2017) Clinical narrative analysis of antibacterial prescription in rabbits presenting with signs of respiratory disease. British Small Animal Veterinary Association Congress, 6th – 9th April 2017. Birmingham, UK.

AD Radford (2016) Big Data: Big Opportunities. London Vet Show 2016. 18th November 2016. London: UK.

DA Singleton, S Dawson, GL Pinchbeck, PJM Noble, F Sanchéz Vizcaíno, PH Jones, NJ Williams, AD Radford. (2016) UK: National near real-time antimicrobial surveillance in companion animals – a health informatics approach. 4th International conference on responsible usage of antibiotics in animals. 26th-28th September 2016. The Hague, Netherlands.

Future sponsorship

We are most grateful for the support of AWF and we hope that the trustees have found sponsoring SAVSNET a worthwhile investment, both by supporting the work we do and also further raising the profile of the foundation in veterinary health informatics. In addition, if there were particular interests amongst AWF, SAVSNET can develop projects to help answer these questions. We welcome discussion of future sponsorship and hope our relationship with AWF can continue.