

VetCompass Clinical Data Points the Way Forward

Abstract

The majority of companion animal practices store patient records electronically, but mainly in free-text format. This makes interrogation of clinical data to assess disease levels very difficult. The VetCompass epidemiology project encourages practitioners to record diagnoses from a standardised list of veterinary terms, called the VeNom Codes, to allow easier interrogation and analysis of practice caseloads by practitioners and researchers as well as facilitate communication between practice computerised systems and laboratories, insurance companies and microchip registers. Analysis of merged veterinary practice clinical records can highlight disorder and welfare priorities and changing patterns in companion animal disease as well as facilitate clinical audit, insurance claim submissions and within-practice analysis.

Author:

Dan O'Neill MVB BSc(hons) GPCert(SAP) GPCert(FelP) GPCert(Derm) GPCert(B&PS)

MSc(VetEpi) MRCVS

Veterinary Epidemiology and Public Health, The Royal Veterinary College, Hawkshead Lane, North Mymms,
Hatfield, Herts AL9 7TA
doneill@rvc.ac.uk

VetCompass Clinical Data Points the Way Forward

Veterinary practice in Ireland has changed dramatically over the past 25 years. Practices have evolved to become more businesslike and the majority now use electronic systems to record patient records (86% in the UK according to Robinson and Hooker (2006)). One of the challenges of running a small business is dealing with the increasing pace of change and the importance of making the best decisions appropriate to your individual business. Despite our scientific backgrounds, choices often remain based upon personal ‘instinct’ or ‘gut feeling’. The long training and experience of a veterinary surgeon encourage easy acceptance of their own beliefs in the absence of supporting ‘hard data’. Although quick and comfortable, this approach may produce inadequate decision-making. A better approach may be the rebranding of that old corporate adage; ‘*To manage a problem, you have to measure the problem*’ that has been introduced to veterinary medicine as *evidence based veterinary medicine* (EBVM). Accurate and efficient data collation, analysis and interpretation systems are at the heart of effective EBVM.

In these difficult times for Irish veterinary practices, the relevance of rational decision-making has never been more important and it would initially appear that analysis of veterinary practice clinical records to this end should be straightforward. Good clinical practice makes for good business practice. Clinical audit is the systematic review of clinical performance and the refining of clinical practice as a result of measuring performance against agreed criteria (Viner, 2009). Clinical audit is a major stanchion of the Clinical Governance guidance within the 2012 RCVS Code of Professional Conduct (RCVS, 2012). Clinical governance is a continuing process of reflection, analysis and improvement in professional practice for the benefit of the animal patient and the client owner. Essentially, specific aspects of what we currently do are compared with how they should be done to identify areas for improvement.

For example, assume that we are interested in evaluating our level of bitch ovariohysterectomy post-operative complications. We would first try to identify all spays via billing codes or other search strategies. Manual examination of these case records would then enumerate standardised outcomes (e.g. wound breakdown, wound infection, etc) for comparison against internal practice targets or external benchmarks, with improvements implemented where failings were identified. The process of clinical audit is strongly supported by SPVS, who have created a specific Clinical Audit Group that aims to develop a

culture where clinical audit is a routinely used and valued tool. The Clinical Audit Group has even carried out a member audit on neutering post-operative complications to aid the interpretation of individual practice results, showing an overall complication level of 15.9% with 1.2% requiring surgical intervention (SPVS, 2005).

However, even with this simple example and the benefits from modern electronic practice management systems (PMS's), it may be difficult to identify all ovariohysterectomy cases. Using a search word such as 'spey' would have missed animals that had a 'spay' or 'neuter' or 'desex', let alone those with mis-spelled procedure names or abbreviations. And even assuming that all cases were found, whilst reading the clinical records of 10 or 20 animals is possible, this would become an impossible task for an epidemiological study including thousands of animals. The SPVS neutering audit described above included pooled data from 18,963 surgical cases.

Epidemiology is the study of health events at a population level and this was the problem faced by UK epidemiologists in 2008 in the aftermath of the BBC program 'Pedigree Dogs Exposed' (BBC, 2008). This program alleged that purebred dogs suffered higher disease levels than crossbred because of decades of inbreeding and the show-ring's emphasis on looks over and above function and health. It estimated that 75% of the UK's dogs were purebred and cost their owners £10 million in vet fees every week. Specific breeds and disorders were highlighted such as the Cavalier King Charles Spaniels and syringomyelia and Bulldogs and dystocia. The fallout from the program was huge, with three major reports being commissioned to look at pedigree dog breeding and health in the UK (Bateson, 2010, APGAW, 2009, Rooney and Sargan, 2008). The overall conclusion was that current dog breeding practices did impose welfare costs but that progress was hampered by a lack of prevalence information for individual disorders. Incredibly, although the canine genome has been sequenced (Lindblad-Toh, 2005), the prevalence of important disorders such as cancer or dystocia among dogs and cats remained unknown. To redress this deficit, the Bateson Report (Bateson, 2010) recommended building upon the VetCompass project (VetCompass, 2012) at the Royal Veterinary College, London (RVC) to create a computer-based system for the collection of anonymised diagnoses from veterinary surgeries to provide statistically significant prevalence data for individual breeds. In essence, this would be a national clinical audit system to enumerate disorders a national level but that could also be used by individual practices.

As described above, one of the major hurdles to studying large-scale practice records is to move from free-text notes towards a common coding system. VetCompass overcame these problems of mis-spellings, abbreviations and varied clinical terms by implementing a data dictionary of standardised veterinary terms, the VeNom Codes (The VeNom Coding Group, 2012), into the PMS's of participating practices. The VeNom Codes have been developed and refined by the RVC in collaboration with several other veterinary schools and practice groups to create a comprehensive and usable list of species, breeds, presenting signs, procedures and diagnoses. Rather than recording diagnoses freehand within the clinical notes, VetCompass practices type the first few letters into a diagnosis window and select their preferred term from a drop-term list (Fig.1). This speedy recording system ensures universally correct spelling and common terminology. For example, going back to the earlier example, bitches would be coded as having a 'Ovary: Ovariohysterectomy (spey) - elective neutering' simply by typing the search letters 'ova' or 'neu' or 'spe' and selecting this term. Likewise, typing the first few letters of the word 'complication' will allow selection from the terms shown in Fig.2 to describe post-operative complications. These two categories can be rapidly cross-referenced to show the post-operative complication rate for bitch ovariohysterectomy surgeries without trawling through clinical records.

The VetCompass project (Veterinary companion animal surveillance system) shares clinical data with primary veterinary practices across the UK. De-identified clinical records are uploaded electronically into a single secure database at the RVC. Support material such as leaflets, posters (Fig.3) and a website (Fig.4) explain the project to clients and raise practices' welfare and scientific credentials. VetCompass has ethical approval from the RVC Ethics and Welfare Committee and is fully compliant with relevant Data protection Legislation. The Royal College of Veterinary Surgeons (RCVS) supports the aims of VetCompass.

The pivotal role of the veterinary profession and VetCompass in improving animal welfare is emphasised by project supporters that include organisations such as the RSPCA, the Dogs Trust, the Kennel Club and the Universities Federation for Animal Welfare. VetCompass data can be used for a wide range of clinical research to elucidate questions relating to the animals seen in primary practice, the disorders affecting them and the treatments administered. Current VetCompass PhD studies include canine pyoderma, canine cancer and inherited disorders of dogs and cats while MSc studies cover canine chronic renal disease, canine diabetes mellitus and feline hyperthyroidism.

The use of a common coding system for breeds and diagnoses also brings significant management benefits to individual practices, as recognised by support from the Society of Practising Veterinary Surgeons (SPVS), including:

- ✓ Facilitating clinical audit
- ✓ Easier pet insurance claim completion as claim terms are readily available for para-clinical staff without recourse to the attending veterinary surgeon.
- ✓ Speedier patient histories of summary diagnoses review at consultation time.
- ✓ Purchasing decisions can be scientifically evidenced; e.g. likely use and profitability from proposed acquisitions of drug or surgical kit can be assessed by reviewing the current clinical load.
- ✓ Over time, insurance companies, laboratory services and microchip companies will adopt the VeNom codes, allowing seamless communication with veterinary practices, facilitating data transfer and reducing costs.

VetCompass currently collaborates with over 150 practices in the UK. Clinical data from 90 practices, mainly in the south-east England (Fig.5) already cover over 250,000 unique animals and 1.5 million unique episodes of care (as of March 2012). Several veterinary PMS's are already fully compliant (RxWorks, Teleos, Vet-One, Freedom, Helix, Tristan) with many others in the process. An equine version of the VeNom Codes is currently being trialled at the RVC with plans to develop an Equine VetCompass in parallel with the current version. Many PMS's cover horse as well as small animal records, so this development would be relatively straightforward.

VetCompass demographic results have revealed that dogs comprise 47% of practice patients while cats make up 43%. Purebred dogs comprise 82% of dogs but only 12% of cats. While over 50% of dogs are neutered, over 80% of cats are neutered. More dogs are insured than cats (34% versus 23%) and microchipped than cats (27% versus 22%) (VetCompass, 2012). From a pharmacotherapeutic perspective, a VetCompass study has shown that systemic glucocorticoid therapy is common among dogs and cats (14% and 16% of consultations with pharmacotherapy respectively) and cats receive higher dosages than dogs. (O'Neill et al., 2012). Another study described patterns of use of systemic broad spectrum antimicrobials in

cats and dogs and highlighted that inappropriate usage may contribute to the development of antimicrobial resistance (Mateus et al., 2011).

VetCompass will run long-term, with extending life periods included as well as increased numbers of animals. Although initially developed in the UK, international expansion (the project is also being piloted in Spain and Germany) will lead to increasingly powerful studies that will elucidate issues relating to companion animal health that were previously impossible to understand. It is hoped that Irish practices will also participate in VetCompass, contributing information on the unique Irish companion animal health perspective. Interested practices can get more information on the project at www.rvc.ac.uk/VetCompass or by contacting the author by email (doneill@rvc.ac.uk). VetCompass is one of those rare but special win-win events where good medicine, good welfare and good management align.

Figures

Fig.1. Diagnostic terms are selected from the in-built VeNom list by entering their first few letters and then selecting the preferred term from the options offered. This example shows the process within the RxWorks practice management system.

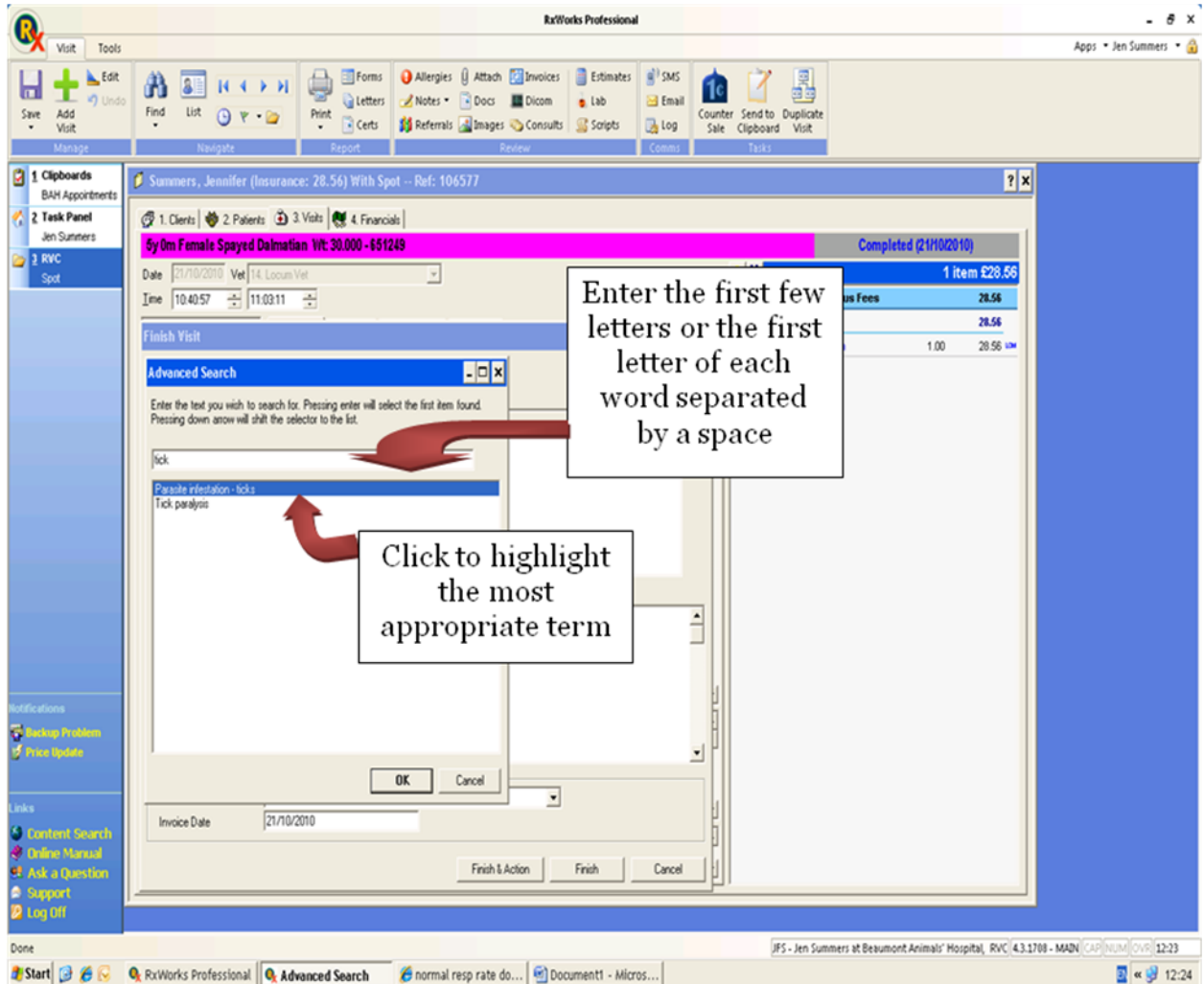



Fig.2. Choices for coding post-operative complications offered from the VeNom Code list by typing the search letters 'comp'

- Post-operative complication
- Post-operative complication - gastrointestinal anastomotic dehiscence
- Post-operative complication - haemorrhage
- Post-operative complication - incisional hernia
- Post-operative complication - infection
- Post-operative complication - infection with septicaemia
- Post-operative complication - wound breakdown
- Post-operative complication - wound infection
- Post-operative complication - wound infection with MRSA
- Post-operative complication - wound necrosis
- Post-operative complication - wound seroma


Fig.3. VetCompass participating practices are provided with leaflets and brochures explaining the benefits to the project to animal welfare.



Fig.4. The VetCompass website (www.rvc.ac.uk/VetCompass) supports the project by sharing benchmarking and study results as well as promoting participating practices.



Health Surveillance
for UK Companion Animals



- VetCompass
- News
- About VetCompass
- Info for Practices
- Info for PMS Providers
- Info for Pet Owners
- Benchmarking
- Research
- VetCompass Reports and Related Publications
- Supporting Statements
- Contact Us
- VetCompass Practices
- Links

Benchmarking


In this area you will find a summary of the current progress rates and other statistics for the VetCompass project to date.

Recruitment Status

March 2012

VetCompass Status (n)	
Practices actively contributing	92
Unique animals	269,227
Unique dogs	126,687
Unique cats	116,548
Unique episodes of care	1,535,517

The map below shows the distribution of VetCompass collaborating practices.



Latest News

8 March 2012
Research News: VetCompass and the Kennel Club Charitable Trust collaborate on project entitled 'Disease Surveillance in Kennel Club registered dogs in the UK'.


11 Nov 2011
['VEctAR' becomes 'VetCompass'!](#) (Veterinary Companion Animal Surveillance System).

3 June 2011
VEctAR and RxWorks Collaborate for RxWorks Webinar Series. Please [click here](#) to view video.


4 May 2011
VEctAR Animal Surveillance published in 'Dog World!'

25 February 2011
VEctAR Animal Surveillance on Wikipedia!
- see [Electronic Medical records](#)

Collaborators



THE UNIVERSITY OF SYDNEY




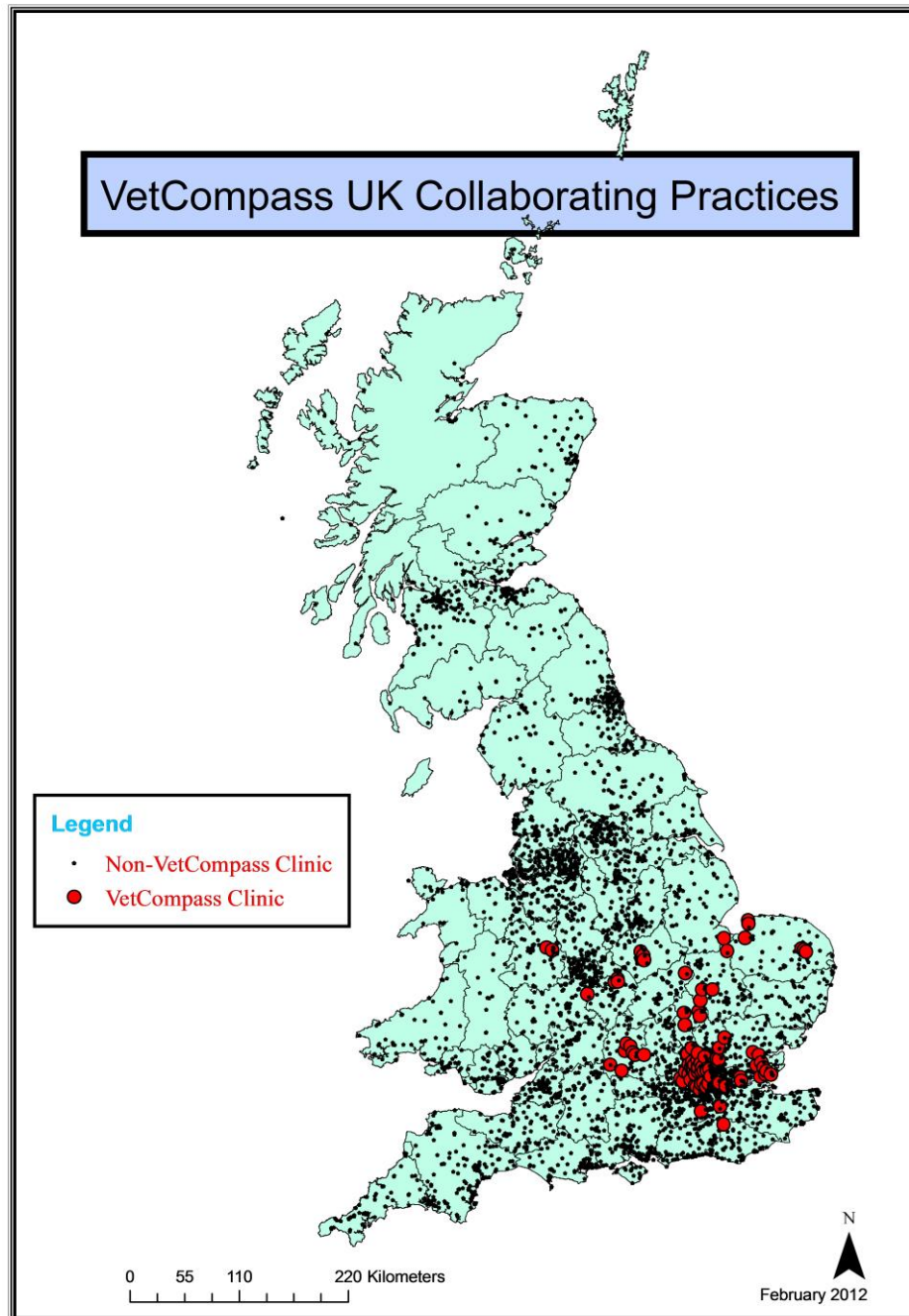


Fig.5. VetCompass participating practices are currently situated in the south-east of England but practices awaiting entry will increase distribution across the whole of the UK.



Questions

- 1) What percentage of UK vet practices used electronic patient record systems in 2006?
 - a) 26%
 - b) 46%
 - c) 66%
 - d) 86%
- 2) What does the VetCompass acronym stand for?
 - a) Veterinary companion animal surveillance system
 - b) Veterinary computerised automated standardised system
 - c) Veteran companion animal salvation study
 - d) Veterinary compass
- 3) What is epidemiology?
 - a) The study of skin disease
 - b) The study of health events at a population level
 - c) The study of the epidermis
 - d) The study of seizures
- 4) According to VetCompass demographic studies, what proportion of UK dogs are purebred?
 - a) 12%
 - b) 28%
 - c) 75%
 - d) 82%
- 5) What percentage of dog consultations with drug therapy included systemic glucocorticoid therapy?
 - a) 2%
 - b) 8%
 - c) 14%
 - d) 20%

References

- APGAW 2009. A healthier future for pedigree dogs. *A healthier future for pedigree dogs pp.56*. The Associate Parliamentary Group for Animal Welfare, London, UK.
- BATESON, P. 2010. Independent Inquiry into Dog Breeding.
- BBC. 2008. *Pedigree Dogs Exposed* [Online]. Available: http://www.bbc.co.uk/pressoffice/pressreleases/stories/2008/08_august/19/dogs.shtml [Accessed May 31 2011].
- LINDBLAD-TOH, K. 2005. Genome sequence, comparative analysis and haplotype structure of the domestic dog. *NATURE*, 438, 803-819.
- MATEUS, A., BRODBELT, D. C., BARBER, N. & STÄRK, K. D. C. 2011. Antimicrobial usage in dogs and cats in first opinion veterinary practices in the UK. *Journal of Small Animal Practice*, 52, 515-521.
- O'NEILL, D., HENDRICKS, A., SUMMERS, J. & BRODBELT, D. 2012. Primary care veterinary usage of systemic glucocorticoids in cats and dogs in three UK practices. *Journal of Small Animal Practice*, 53, 217-222.
- RCVS. 2012. *Code of Professional Conduct for Veterinary Surgeons* [Online]. Available: <http://www.rcvs.org.uk/advice-and-guidance/code-of-professional-conduct-for-veterinary-surgeons/> [Accessed May 18th 2012].
- ROBINSON, D. & HOOKER, H. 2006. The UK veterinary profession in 2006 *In: ROYAL COLLEGE OF VETERINARY SURGEONS* (ed.). London: Institute for Employment Studies.
- ROONEY, N. & SARGAN, D. 2008. Pedigree dog breeding in the UK: a major welfare concern? .
- SPVS. 2005. *Clinical Audit Group* [Online]. Available: <http://www.vetaudit.co.uk/> [Accessed May 18th 2012].
- THE VENOM CODING GROUP. 2012. *VeNom Veterinary Nomenclature* [Online]. VeNom Coding Group. Available: <http://www.venomcoding.org> [Accessed May 4th 2012].
- VETCOMPASS. 2012. *VetCompass: Health surveillance for UK companion animals* [Online]. RVC Electronic Media Unit. Available: <http://www.rvc.ac.uk/VetCompass> [Accessed November 29 2012].
- VINER, B. 2009. Using audit to improve clinical effectiveness. *In Practice*, 31, 240-243.

Correct quiz answers

- 1) d)
- 2) a)
- 3) b)
- 4) d)
- 5) c)