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# Journal of Commonwealth Veterinary Association



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## LAST PRINT EDITION

The Journal of Commonwealth Veterinary Association will be an E-Journal from July 2014 and will be renamed as **Commonwealth Veterinary Journal.**

~ Editor, JCVA

# Journal of Commonwealth Veterinary Association

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The JCVA publishes original articles, case reports, short contributions and review articles. Please contact the Editor if you plan to write a review.

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Type each table double-spaced on a separate page. Number tables in Arabic in the order they are referred to in the text. Each table should have a concise title that describes its content adequately. Information in the table must not be repeated in detail in the text.

Do not use vertical lines. Use horizontal lines to separate the table from the title, and footnotes and column headings from data.

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Both black and white and colour photographs are encouraged to a maximum of five only. Figures can be submitted in digital form as separate files. They should be saved as TIFF, JPEG or EPS files with a resolution of 300 dpi. EPS files must be saved with the preview option. Illustrations provided as MS Word files will not be accepted. Write legends for figures and explanations of symbols on a separate page. Legends should contain enough information to make the figure comprehensible without reference to the text.

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1. Gibson KT, Hodge H, Whittam T. Inflammatory mediators in equine synovial fluid. *Aust Vet J* 1996; 73: 148-151.
2. Peterson ME, Randolph JF, Mooney CT. Endocrine diseases. In: Sherding RG, Editor. *The Cat: Diseases and Management*. 2nd edn. Churchill Livingstone, New York, 1994: 1403-1506.
3. Rhodes AP. Infectious bovine keratoconjunctivitis vaccination. In: *Proceedings of the 23rd Seminar, Sheep and Beef Cattle Society*, New Zealand Veterinary Association, June 1993.
4. Australian Veterinary Association. Tethering of sows and sow stalls. In: Greenwood PE, editor. *Members' Directory and Policy Compendium*. 1997: B5.
5. Where do we stand on manpower? [editorial] *Vet Rec* 1995; 137: 1.
6. Homberger FR. Mäusehepatitis-Virus. *Schweiz Arch Tierheilkd* 1996; 138:183-188.
7. Council of Docked Breeds. The case for docking. <http://www.cdb.org>. 1992. Retrieved 15 October 2001.

List all authors if there are five or fewer. When there are more than five authors, list only the first three and add 'et al'. Write titles of books, journals and other publications in italics. Capitalise only the first letter of the book titles. Do not underline or use bold letters. The abbreviation of journals follows that of Serial sources for the BIOSIS previews database. Cite references to unpublished work only in the text, with a notation of (personal communication) or (unpublished). Please send a copy of any cited work that is included in the reference list as 'in press'. It is the authors' responsibility to check the accuracy of reference citations.

### Acknowledgments

Only acknowledge significant intellectual, technical and financial contributions. A short work warrants short acknowledgments.

### Articles of General Interest

Articles of general interest, experiences in treating of clinical cases, country reports, success stories in animal production, using innovative approaches and where possible enhancing the contribution of women and also using sustainable methods are also encouraged.

### Review Articles

Reviews on a specific topic usually are written by invitation. Other authors wishing to submit a review should first enquire of the editor whether the topic is of interest to the Journal. A synopsis of the proposed article often will be requested before the writing of the full version is commenced. Reviews should provide a critical assessment of published works that have contributed to the development or understanding of the chosen topic. The soundness of experimental evidence and the validity of conclusions and recommendations in cited articles should be assessed. Conflicting observations and interpretations should be examined and evaluated.

~ Editor, JCVA

## President's Column



Dr. S. Abdul Rahman

*The business of running the CVA has been evolving ever since Dr. Choquette in Canada managed CVA affairs from a desk in his basement. The CVA is still a volunteer organisation with no full or part time paid staff; but that shouldn't be taken as a sign that CVA has not kept up to date with current business practices. Ever since CVA in 1991 began a formal planning cycle based on a 4 year work plan, it has braved severe financial constraints to make it one of the few professional organisations that cater both to the needs of the Veterinarians and the livestock keepers especially in the developing countries of Africa and Asia.*

*The CVA has developed strategic partnerships with many International organisations such as the World Organisation for Animal Health (OIE), the World Society for the Protection of Animals (WSPA), Crucell Holland and The Brooke, UK to name a few and with the help of these organisations has been successful in implementing many of its projects and held Regional Meetings.*

*During the year 2012-13, three regional meetings were held, each in the Caribbean, Asian and Australasia Oceania regions. In spite of the severe financial constraints which CVA has in the absence of any major sponsor, all these conferences were highly successful. Our Associate Member WSPA was the major sponsor for these events while the Government of Fiji magnanimously supported the Conference in Fiji.*

*The highlight of the Caribbean Meeting was the Disaster Management Workshop sponsored by WSPA, while that of the Asian Regional Meeting and Conference was the inauguration of the **CVA-Crucell-KVAFSU Rabies Diagnostic Laboratory** at the Veterinary College, Bangalore. This laboratory was built with financial contributions from Crucell, Holland who have now entered into partnership with CVA for a Rabies Monoclonal Antibodies Project in India. The CVA in turn has signed a MoU with the Karnataka Veterinary Animal and Fisheries Sciences University (KVAFSU) to implement this project. Through this project CVA will be able to save human Rabies deaths not only in India but in other parts of the world as well.*

*The Australasia Oceania Regional Meeting which was held in Fiji during September was again a grand success with the President of Fiji inaugurating the Conference (see detailed report in this issue).*

*The CVA Continuing Professional Development (CPD) programme, which was initiated by Drs. Jeff Cave and Chris Deborn is making slow progress and the CVA is currently seeking financial support from various agencies to implement this programme initially in Africa.*

*One more highlight of 2013 initiated by Dr. Jeff Cave, our Book and Journal Programme Coordinator is the CVA Face Book page. Immediately after it was hosted there were nearly 10,000 "likes" within a week which shows how popular it has become among the Veterinarians and animal lovers throughout the world.*

*Planning for the Sixth Pan Commonwealth Veterinary Conference to be held in Kuala Lumpur, Malaysia from March 24th to 27th 2015 has begun. The host organizing committee will be the Veterinary Association Malaysia (VAM) headed by Dr. Paul Chelliah, the Regional Representative of Australasia Oceania Region and President-Elect of VAM. He will be assisted by Dato' Dr. Vincent Ng In Hooi who is the current President of VAM and other members of the Executive of VAM. Prof. Mohd Hair Bin Bejo, Dean Faculty of Veterinary Medicine, Universitii Putra Malaysia has agreed to Chair the Scientific Committee.*

*I also have a very important announcement to make and that is to inform all of you that this issue of JCVA will be the last "Print Edition" and from the July 2014 issue the journal will be available only in the electronic form as an E-Journal. There is also going to be a change in the name of the journal. The Journal will now be known as the "**Commonwealth Veterinary Journal**" The new website of the journal will be [commonwealthveterinaryjournal.com](http://commonwealthveterinaryjournal.com) and the most important feature of this will be that all back volumes of the journal starting from 1988 will be available in the Archives Section.*

*As the Editor of JCVA, I would like to take this opportunity to thank each and every one of my colleagues who have helped me with the printing and posting of the journal for the last 25 years. I would like to make a special mention of the help rendered by my wife Shireen, Mr. Anubhavi for his dedicated desktop publishing work and to my printer Mr. Lawrence who supervised the printing to ensure that the journal met International standards. I will miss holding the hard copy of the journal hot off the press!!!!!!*

*Looking to the future, the CVA has recognised the need to acquire a registered charitable status. This reflects the CVA's philanthropic and social objectives. It is pleasing to report that the CVA, as from 1st January, 2014, is registered as a Charitable Trust under the Indian Trust Act 1982. In close co-operation with our national veterinary associations I look forward to building upon our international role in driving and implementing animal welfare and health throughout all our member countries.*

*In conclusion, I want to thank my CVA colleagues Drs. Richard Suu-Ire, Karen Reed, Peter Thornber and Bob McCracken in particular and all members of the Executive Committee of CVA for all their help and support in making this a very memorable year.*

*May you enjoy good health and success in 2014.*

*January 2014*

**S. Abdul Rahman**  
*President*

**Commonwealth Veterinary Association  
Wishes its Readers and Members  
A Happy New Year 2014.**

## Review Article: Coagulase-Negative Staphylococci in Mastitis

S. Sundareshan<sup>1</sup>, Shrikrishna Isloor<sup>2\*</sup>, Y. Hari Babu<sup>3</sup>, Trilochan K. Mukkur<sup>4</sup>, Nagendra R. Hegde<sup>5</sup>

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India

### Abstract

Mastitis is the most economically important disease of livestock production, and staphylococci are the major pathogens causing subclinical and chronic mastitis across the globe. Although *Staphylococcus aureus* is still the predominant staphylococcal species associated with mastitis, of late, coagulase-negative staphylococci (CoNS) are being frequently reported in many countries and are therefore described as “emerging mastitis pathogens.” CoNS usually cause mild, subclinical or chronic infections, resulting in increase in milk somatic cell count. The incidence and prevalence are higher in heifers and primiparous animals, in cows during dry period, and in small ruminants. Although high spontaneous cure rates are observed, CoNS frequently exhibit higher antimicrobial resistance than *S. aureus* and tend to develop multi-drug resistance, and infections sometimes lead to poor response to antibiotic treatment. So far, as many as 16 CoNS species have been isolated from bovine milk. Of these, *S. chromogenes*, *S. epidermidis*, *S. haemolyticus*, *S. simulans* and *S. sciuri* are the most common species associated with bovine mastitis. Although conventional culturing methods are employed routinely, molecular detection methods are superior for accurate and rapid identification of CoNS species. The salient features and diverse aspects of CoNS intramammary infection (IMI) in dairy herds are summarized here.

### Introduction

The last forty years have seen a change in the relative and absolute importance of different pathogens of mastitis. Staphylococci are the most important pathogens associated with mild, subclinical and chronic mastitis, which is not easily detectable. The genus *Staphylococcus* consists of more than 50 species and subspecies. Based on the ability to coagulate plasma, the genus is divided into two groups; viz., coagulase-positive staphylococci (predominantly *Staphylococcus aureus*) and coagulase-negative staphylococci (CoNS). Till recently, *Staphylococcus aureus* was the most common species associated with bovine mastitis in many countries, but of late, CoNS are also being increasingly reported (Bengtsson *et al.*, 2005; Kuang *et al.*, 2009). In contrast to *S. aureus*, coliforms and streptococci, which can cause severe mastitis, CoNS have been often considered opportunistic minor pathogens, causing only subclinical or mild clinical mastitis, with only a marginal increase in Somatic Cell Count (SCC) (Honkanen-Buzalski *et al.*, 1994; Taponen *et al.*, 2006). Of late, CoNS as a group have been isolated as the predominant species from subclinical and clinical mastitis in different parts of the world, at times superseding *S. aureus* (Tenhagen *et al.*, 2006; Koivula *et al.*, 2007; Lim *et al.*, 2007; Schukken *et al.*, 2009), and are therefore described as “emerging mastitis pathogens” (Pyörälä and Taponen, 2009).

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To date, 16 CoNS species have been identified from mastitic bovine milk samples, and despite some variation between herds and countries, *S. chromogenes*, *S. epidermidis*, *S. haemolyticus*, *S. simulans*, *S. sciuri* and *S. xylosus* seem to be the most common (Taponen *et al.*, 2006; Middleton *et al.*, 2010; Shome *et al.*, 2011; Sundareshan *et al.*, 2012; Frey *et al.*, 2013). This review summarizes the common features and diverse aspects of CoNS intramammary infection (IMI) and its significance in dairy herds.

### Identification of CoNS

Although CoNS are normally treated as a group in routine mastitis diagnostics, they consist of several species. Because of their increasing clinical significance, accurate species identification of CoNS is highly desirable for a more precise determination of host-pathogen relationship. In view of the misidentification of CoNS species and the variation in the accuracy of conventional / commercial identification systems and the proven superiority of genotypic methods over phenotypic assays (Langlois *et al.*, 1983; Thorberg and Brandstrom, 2000; Lee and Park, 2001; Becker *et al.*, 2004; Sivadon *et al.*, 2004; Ben-Ami *et al.*, 2005; Fujita *et al.*, 2005; Heikens *et al.*, 2005; Skow *et al.*, 2005; Shittu *et al.*, 2006; Akineden *et al.*, 2011), sequence-based genotyping methods are better for the accurate identification of CoNS species (Heikens *et al.*, 2005; Capurro *et al.* 2009). Considering this, molecular detection methods have become popular and are being routinely used for identification of the CoNS species due to the shorter turnaround time, and higher sensitivity and specificity (Devriese *et al.*, 2002; Drancourt and Raoult, 2002; Heikens *et al.*, 2005; Skow *et al.*, 2005; Capurro *et al.*, 2009; Thorberg *et al.*, 2009; Shome *et al.*, 2011; Sundareshan *et al.*, 2012). Various genes including *hsp60* (Goh *et al.*, 1996; Anita *et al.*, 1999), *16S-23S rRNA* spacer region (Forsman *et al.* 1997), *cpn60* (Goh *et al.*, 1997), *sodA* (Poyart *et al.*, 2001), *rpoB* (Drancourt and Raoult, 2002), *tRNA* intergenic spacer region (Devriese *et al.*, 2002), *tuf* (Heikens *et al.*, 2005; Capurro *et al.*, 2009), *gap* (Ghebremedhin *et al.*, 2008), and a combination of *gap/rdr*, *rpoB*, and *sodA* (Shome *et al.*, 2011; Sundareshan *et al.*, 2012) have been found to be the suitable targets for taxonomical analysis of CoNS species.

### CoNS as causative agents of mastitis

Estimating SCC in milk is the gold standard for mastitis diagnosis, and various cut-off values are used in different parts of the world for determining milk quality and to declare clinical or subclinical mastitis (SCM). Many investigators have attempted to study the correlation

between SCC and mastitis status with the recovery of CoNS isolates. CoNS infection is generally associated with an increase in SCC of infected quarters. Even a transient CoNS infection can cause a temporary increase in SCC (Taponen *et al.*, 2007; Laevens *et al.*, 1997; Sundareshan *et al.*, 2012). However, SCC in CoNS infected quarters is generally lower compared with SCC values associated with infections caused by other common Gram-positive mastitis pathogens such as *S. aureus* and streptococci. Whereas the SCC of a healthy quarter usually remains below  $5 \times 10^4$ /mL, it can be up to 10-fold or higher ( $e^{+6} \times 10^5$ /mL) in CoNS infection (Barkema *et al.*, 1999; Djabri *et al.*, 2002; Taponen *et al.*, 2007), and high average SCC is associated with a higher occurrence of CoNS mastitis (de Haas *et al.*, 2004). They can cause persistent infections, resulting in increased milk SCC, thus affecting milk quality, and may be related to decreased milk production. However, the economic impact of bulk milk SCC depends on the regulatory limits for SCC and quality premiums in individual countries (Pyorala and Taponen, 2009).

In many modern dairy herds, CoNS are frequently associated of bovine mastitis (Pyorala and Taponen, 2009). There is now an increasing laboratory-based evidence in many countries to suggest that CoNS are the most common mastitis pathogens, especially in case of SCM (De Haas *et al.*, 2004; Bengtsson *et al.*, 2005; Tenhagen *et al.*, 2006; Koivula *et al.*, 2007; Lim *et al.*, 2007; Kuang *et al.*, 2009; Schukken *et al.*, 2009; van den Borne *et al.*, 2010; Sampimon *et al.*, 2011; Shome *et al.*, 2011; Supré *et al.*, 2011; Sundareshan *et al.*, 2012; Frey *et al.*, 2013; Yannick *et al.*, 2013). Although CoNS affect cattle of all ages, CoNS mastitis is more prevalent in primiparous cows, especially around calving, than in older cows (Matthews *et al.*, 1992; Tenhagen *et al.*, 2006). CoNS can colonize the mammary gland of pregnant heifers (Myllys, 1995) as well as mammary gland and teat apices of young heifers (De Vlieghe *et al.*, 2003). Generally, multiparous cows become infected with CoNS in later lactation whereas primiparous cows are usually infected at the beginning of lactation (Grohn *et al.*, 2004; Taponen *et al.*, 2007).

Intramammary infections (IMI) due to CoNS are known to reduce milk production (Grohn *et al.*, 2004; De Vlieghe *et al.*, 2005). CoNS may cause leukocyte infiltration and increase interalveolar stroma, resulting in negative effects on future milk production in heifers (Trinidad *et al.*, 1990). As CoNS infection induces an immunological reaction in the udder, it should not be considered a mere teat canal colonization or a normal situation for the udder (Taponen *et al.*, 2007). On the contrary, some authors have opined that infection with minor pathogens like *S. chromogenes* or



other CoNS would be beneficial as they might protect the quarter from subsequent mastitis with major pathogens like *S. aureus* (Schukken *et al.*, 1989; Matthews *et al.*, 1990). Possible mechanisms for this effect could be increased SCC or bacteriocins produced by the bacteria (Matthews *et al.*, 1990; De Vliegher *et al.*, 2004). However, the possible protective effect of CoNS remains theoretical and CoNS infections should be treated as any IMI (Taponen *et al.*, 2007).

Worldwide, several species of CoNS have been reported in bovine milk samples, *S. chromogenes*, *S. epidermidis*, *S. haemolyticus*, *S. simulans*, *S. xylosum*, *S. hyicus* and *S. warneri* being the most common (Trinidad *et al.*, 1990; Matthews *et al.*, 1992; Myllys, 1995; Aarestrup and Jensen, 1997; Forsman *et al.*, 1997; De Vliegher *et al.*, 2003; Rajala-Schulz *et al.*, 2004; Taponen *et al.*, 2006; Thorberg *et al.*, 2006; Taponen *et al.*, 2007; Thorberg *et al.*, 2009; van den Borne *et al.*, 2010; Sampimon *et al.*, 2011; Shome *et al.*, 2011; Supré *et al.*, 2011; Sundareshan *et al.*, 2012; Frey *et al.*, 2013; Yannick *et al.*, 2013). *S. chromogenes* is a highly prevalent species in subclinical mastitis (Sampimon *et al.*, 2011; Shome *et al.*, 2011; van den Borne *et al.*, 2010; Supré *et al.*, 2011) with a well established impact on SCC (Devriese *et al.*, 2002). *S. epidermidis* and *S. haemolyticus* are also common (Sampimon *et al.*, 2011; Shome *et al.*, 2011; Waller *et al.*, 2011; Sundareshan *et al.*, 2012). The major CoNS species involved in IMI appear to differ between different age groups of animals. *S. chromogenes* is predominant in pre-calving heifers and primiparous cows (Trinidad *et al.*, 1990; Rajala-Schultz *et al.*, 2004; Taponen *et al.*, 2006), whereas *S. simulans* and *S. epidermidis* are more frequent in cows in later lactations (Taponen *et al.*, 2006; Thorberg *et al.*, 2009).

### Global prevalence of bovine mastitis-associated CoNS

CoNS are commonly isolated from clinical mastitic milk, although the proportion of CoNS among isolated bacteria remains low in many countries. For instance, reported incidence rates are 9% in Israel (Shpigel *et al.*, 1998), and 6% in Sweden and Canada (Ekman and Østeras, 2004; Olde Riekerink *et al.*, 2007; Ericsson Unnerstad *et al.*, 2008). Incidence rates in Canada were 1.15 per 100 cow years, lower than that for three major mastitis pathogens (Olde Riekerink *et al.*, 2008). However, in recent times, there has been an increase in the frequency of isolation of CoNS from clinical mastitis as well as SCM samples. In England and Wales, the prevalence of CoNS was 8.1% in clinical mastitis and 14.9% in SCM (Bradley *et al.*, 2007). In routine mastitis sampling in Finland, CoNS

were isolated from 17.6% and 23.5% of clinical mastitis and SCM cases, respectively (Koivula *et al.*, 2007). Random sampling of quarter milk in routine surveys have also revealed the presence of CoNS in 17% of all quarter milk samples with the proportion of CoNS of all isolated pathogens being 50% in Finland (Pitkala *et al.*, 2004), 12.5% of the quarters and 41.1% of cows in Belgium (Piepers *et al.*, 2007), and 11% of all quarters and 32% of cows in the Netherlands (Sampimon *et al.*, 2009). High rates (17% of all the quarters) have also been reported from Switzerland (Schallibaum, 2001). In Germany, the prevalence of clinical mastitis in primiparous cows was more (27.4%) than in multiparous cows (16.4%) (Tenhagen *et al.*, 2009).

In essence, the prevalence of CoNS in bovine mastitis varies from as low as 6.2% as in the case of acute clinical mastitis in Sweden (Ericsson Unnerstad *et al.*, 2008) to as high as 58.4% in case of SCM in Brazil (Medeiros *et al.*, 2009). Of importance, however, is the fact that there is a gradual increase of prevalence of CoNS in bovine mastitis. For example, the prevalence rates increased from about 6.5% in late 1980's to 20% about 20 years later in Finland (Pyorala and Syvajarvi, 1987; Nevala *et al.*, 2004). Unfortunately, in countries where the biggest udder health problems are caused by major environmental mastitis pathogens, CoNS infections have often been ignored (Pyorala and Taponen, 2009).

### Prevalence in India

Studies from South India, albeit few in number, have revealed comparatively higher prevalence of CoNS IMI (Shome *et al.*, 2011; Sundareshan *et al.*, 2012). In one study, (Sundareshan *et al.*, 2012), about 44% of the milk samples (n = 313) were positive for CoNS, which is higher compared to findings in other countries. *S. epidermidis*, *S. chromogenes*, *S. sciuri* and *S. haemolyticus* were the major CoNS species detected in these studies. An exception was *S. simulans*, a predominant CoNS species reported elsewhere, was not found to be associated with CoNS IMI in these geographical locations of India. The proportion of CoNS IMI also seemed to have increased compared to the reports published earlier: 23% for *S. epidermidis* (Verma *et al.*, 1978), 13.82% for CoNS (Shlke *et al.*, 1998), although one earlier study reported 49% for *S. epidermidis* (Mallikarjunaswamy and Murthy, 1997).

### Pathogenicity and virulence determinants of CoNS

CoNS can behave as contagious or environmental pathogens. CoNS mastitis mostly remains subclinical or mild, but is common in dairy cows and may cause herd

problems. Under field conditions, CoNS infections probably progress more slowly and mostly without clinical signs. However, spontaneous CoNS infections can result in clinical mastitis (Olde Riekerink *et al.*, 2008; Tenhagen *et al.*, 2009; Wenz *et al.*, 2010).

Although CoNS are not considered to be as the main pathogens of mastitis, they carry many genotypic and phenotypic virulence determinants similar to *S. aureus*, a known mastitic pathogen. However, the presence of such determinants vary widely among CoNS, resulting in a wide spectrum of pathogenicity. CoNS may differ in virulence factors such as biofilm formation, presence of toxins, antimicrobial susceptibility, host response to infection, and transmissibility, and thus treatment and management of CoNS mastitis may need to be tailor-made for each species (Sampimon *et al.*, 2009).

Interestingly, CoNS are reported to be more resistant than *S. aureus* and can easily develop resistance to multiple drugs (Machado *et al.*, 2008). CoNS may also represent a reservoir of antibiotic resistant genes that could be transmitted to *S. aureus* and other staphylococci, including those pathogenic to humans (Archer and Climo, 1994). Besides this, increased tolerance to biocides such as teat dips may favor the establishment of bovine IMI by some CoNS species (Piessens *et al.*, 2012). The presence of  $\beta$ -lactamases in CoNS has been observed both in human (89% - Archer and Scott, 1991) as well as in veterinary isolates obtained from mastitis cases [75% (Aarestrup *et al.*, 1995), 21–84% (Thornsberry *et al.*, 1997; Myllys *et al.*, 1998; Gentilini *et al.*, 2002), 19% (Taponen *et al.*, 2006) and 51- 69% (Sundareshan *et al.*, 2012)]. Strains with high minimum inhibitory concentrations are known to carry the  $\beta$ -lactamase encoding gene *blaZ*, which mediates resistance to penicillin (Suominen *et al.*, 2002).

Several CoNS have also been shown to be methicillin-resistant. Methicillin resistant (MR) staphylococci show an intrinsic resistance to penicillinase-resistant  $\beta$ -lactam antibiotics, making it difficult to treat infections (Chambers, 1997), and such strains are often resistant to most of the commonly used antimicrobial agents, including aminoglycosides, macrolides, chloramphenicols, tetracyclines and fluorquinolones (Mandell *et al.*, 1995). Indeed, in one study, most of the CoNS isolates of bovine milk origin (85 % of 149 isolates) were found to be multi-drug resistant phenotypically *i.e.*, resistant to more than three classes of antibacterials (Sundareshan *et al.*, 2012). Thus, MRCoNS can also lead to a significant limitation in

therapeutic options (York *et al.*, 1996), to the extent that it has even been recommended that animals carrying MRCoNS be culled (Gentilini *et al.*, 2002). One of the animal-related commensal *Staphylococcus* species, *S. fleurettii*, is reported to be the highly probable origin of the *mecA* gene, which affords resistance to methicillin (Tsubakishita *et al.*, 2010). Although genotypes other than *mecA* can also contribute to methicillin resistance, it is worth noting that presence of *mecA* alone can range from 7.7% to 33% among CoNS (Shittu *et al.*, 2006; Sundareshan *et al.*, 2012; Frey *et al.*, 2013). In addition, CoNS also frequently carry *Tn4001*-like genetic elements carrying the *aac(6')-aph(2')* gene, which encodes a bifunctional enzyme that mediates resistance to gentamicin, tobramycin and kanamycin (Paulsen *et al.*, 1997; Sundareshan *et al.*, 2012).

Biofilm formation by bacteria is another determinant of virulence and pathogenesis. However, carriage of biofilm genes and antimicrobial resistance do not appear to be associated with the ability to colonize the mammary gland because free-living CoNS species constitute a more significant reservoir of biofilm and resistance determinants than do IMI-causing species (Piessens *et al.*, 2012). However, the presence of *icaA*, *bap*, or the combination of multiple genes was associated with a greater ability to form biofilm in CoNS with *S. xyloso* being the strongest biofilm forming species (Yannick *et al.*, 2013). In addition to biofilm formation, certain CoNS may also produce a capsule (Burriel 1998a).

Staphylococci also elaborate a range of toxins which are involved not only in invasion and pathogenesis, but are also frequently responsible for food poisoning (Podkovic *et al.*, 2013). Many CoNS have also been evaluated for toxin-encoding elements as well as toxin expression *in vitro*. Carriage of toxin genes vary from complete absence to 66% of CoNS and more than 80% for certain species (Nemati *et al.*, 2008; Chu *et al.*, 2012; Unal *et al.*, 2012; de Freitas Guimaraes *et al.*, 2013; Lyra *et al.*, 2013; Rall *et al.* 2013), but *in vitro* expression has only been described for very few isolates (Orden *et al.*, 1992a, 1992b; Kanellos and Burriel, 2002; Rall *et al.* 2013). There may, however, be other undescribed toxins with cytotoxic activity as well as pathogenic potential (Mamo *et al.*, 1988; Saa and Kruse, 1995; Burriel *et al.*, 1997a; Zhang and Maddox, 2000). Although high degree of variation exists in the presence of genes and phenotypic expression between different species and different strains among a single species of CoNS, the presence of such genotypes and phenotypes suggests potential pathogenicity.

## Control and treatment of CoNS mastitis

The understanding and control of CoNS mastitis is complicated by the heterogeneity of this group of bacteria. Whereas, SCM, including that caused by CoNS, is generally treated with antimicrobials during lactation in some countries, in other countries, they are left untreated or are treated using other means such as frequent milking-out. Despite the observation of multiple antibiotic resistance *in vitro*, CoNS respond much better than *S. aureus* does to therapy with commonly used antibiotics used to treat mastitis. A number of researchers have reported that cure rates for quarters infected by CoNS are high (80% to 90%). Treatment by intramammary therapy in the peripartum and dry period is effective for controlling infections caused by CoNS. However, treatment is not always effective (Pyorala and Taponen, 2009).

CoNS can induce persistent clinical processes that do not respond to antibiotic treatment. It can induce IMI with alterations in milk (floccules). The general state of the animal is not usually affected, nor are there severe systemic signs. However, antimicrobial treatment at drying-off remains a good tool for persistent CoNS infections, as cure rates of dry cow therapy are generally very high for CoNS infections (Newton et al., 2008).

## Prevalence of CoNS associated with mastitis in small ruminants

Small ruminant dairying has been gaining importance since a couple of decades. Mastitis and IMI are also important in dairy production from sheep and goats. As with bovine mastitis, various organisms have been reported from milk samples of sheep and goats. Incidence rates of CoNS associated with clinical and subclinical mastitis in small ruminants from various parts of the world are as low as 2.8% to 17% (Lafi et al., 1998; Mork et al., 2007; Arsenault et al., 2008; Unal and Cinar, 2012), but frequently are much higher, *i.e.*, 32% to 64% (Watkins et al., 1991; Burriel, 1997b; Ariznabarreta et al., 2002; Suarez et al., 2002; Kunz et al., 2011; Ozenc et al., 2011). Many of these CoNS are resistant to multiple antibiotics (Burriel, 1997b; Kunz et al., 2011; Unal et al., 2012), can increase SCC values (Fthenakis and Jones, 1990; Lafi et al., 1998; Pengov, 2001; Gonzalo et al., 2002; Ozenc et al., 2011), some elaborate toxins (Burriel and Dagnall, 1997; Unal and Cinar, 2012; Lyra et al., 2013), some may produce capsule (Burriel, 1998a), and others may have protective effect (Fragkou et al., 2007). Several species can be isolated from sheep and goat milk samples, and some of them may be of environmental origin (Burriel, 1998b), but the ones most frequently associated with

mastitis are *S. epidermidis*, *S. caprae*, *S. chromogenes*, *S. simulans*, *S. sciuri*, and *S. xylosum* (Akatov et al., 1983; Deinhofer and Pernthaner, 1992; Fthenakis et al., 1994; Ariznabarreta et al., 2002; Onni et al., 2010).

There is no information on mastitis and CoNS in sheep and goats in India. Given that small ruminant dairying is also gaining recognition, such research is warranted.

## Conclusion

Precise identification of species of bovine CoNS isolates is essential to study the species distribution in herds, potential differences in virulence and detection of possible reservoirs involved in bovine mastitis. The information on species-specific difference can be vital for effective mastitis therapy and management. The lack of knowledge of pathogenicity and virulence of this group of bacteria represents a major challenge to the understanding of the CoNS udder infection epidemiology. Hence, dairy industry would benefit from more research on the epidemiology of CoNS in mastitis and their pathogenic potential including antimicrobial sensitivity. Whereas CoNS are considered by some as secondary pathogens of the udder, other researchers have placed great importance on CoNS in the aetiology of sub-clinical or clinical mastitis, and the increased SCC of affected quarters, but the significance of intramammary infections of CoNS still needs to be elucidated. Moreover, the prudent use of antibiotics and, rapid and continuous screening for resistant microorganisms should be more focused to prevent the emergence and spread of MRCoNS.

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## New President of WSAVA

Prof. Colin Burrows has been elected President of the World Small Animal Veterinary Association (WSAVA) with effect from November 1. Professor Burrows, who was the WSAVA's President-Elect, was due to start his term as President in September next year; however his appointment has been brought forward as the previous president, Jolle Kirpensteijn, has moved to a new role with Hill's Pet Nutrition, the main sponsor of the WSAVA.



Prof. Colin Burrows

Professor Burrows, who graduated from the Royal Veterinary College, is an emeritus professor at the University of Florida, College of Veterinary Medicine and former chief executive of the North American Veterinary Conference. He will serve as WSAVA president until the next meeting of the association's general assembly in South Africa in September next year, when he may then be re-elected to serve his full term until January 2016.

~ Veterinary Record, Nov 9, 2013

## Ending Inhumane Culling Of Dogs In The Name Of Rabies

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The World Society for the Protection of Animals (WSPA) exists to tackle animal cruelty and suffering worldwide. It aims to achieve this through moving individuals, organisations and governments around the world to transform the lives of animals by improving their welfare.

Since 2011, under its programme to protect animals in communities, WSPA's focus has been to prevent the inhumane culling of dogs as a method to control rabies. Mass dog culls are widely used in a misguided effort to stop the spread of rabies, because they are perceived as cheap, easy and effective. However, there is no evidence that these culls work as a method of controlling rabies. Research and evidence from established programmes, such as in Latin America, demonstrate that the only effective solution is the humane option: mass dog vaccination (WHO, 2013).

With zoonotic diseases such as rabies, it can be difficult to determine which government agency should lead control efforts. Human health agencies can be reluctant to support animal vaccination programmes, whereas animal health agencies alone are not able to manage the human health consequences of the disease. Thus the establishment of a comprehensive rabies control programme often 'falls between the cracks'.

WSPA supports a 'One Health' approach that sees animal and human health as inextricably connected. In the case of rabies, where dog bites are the primary source of human infection, controlling canine rabies through humane mass dog vaccination also protects the human population. Besides saving human and animal lives, this can significantly reduce government expenditure on human post-exposure prophylaxis and other treatments.

Thus, the ideal scenario is for all relevant agencies to work together under a coordinated framework, to address both the animal and human aspects of the problem.

Furthermore, when coupled with WSPA's experience of humane dog population management and responsible pet ownership, other conflicts between people and dogs can also be mitigated, enabling co-existence without fear of disease.

### WSPA's 'Red Collar' Campaign

WSPA's campaign to end the culling of dogs is referred to as the 'Red Collar' campaign, a name derived from the first programme run in Bali in 2011, where vaccinated dogs were given red collars to indicate their vaccination status. In this campaign, WSPA works with governments and their partners to implement the scientifically supported and well-accepted principle of controlling rabies through vaccination of at least 70 per cent of an area's total dog population (WHO, 2013), instead of culling dogs. Creating herd immunity through sustained vaccination programmes, ensuring that coverage does not drop below 20-45% between programmes, prevents the spread of the disease in the canine population, protecting humans too.

WSPA is sometimes questioned as to whether it would be preferable to undertake a combination of vaccination and culling of unvaccinated dogs. However, aside from the animal welfare and ethical concerns, there are a number of reasons why this is not recommended:

1. The spread of rabies does not depend on the density of dogs. Recent research shows that the spread of rabies in very low-density dog populations is very similar to that in very high-density populations (even those that are one hundred times higher) (Hampson et al., 2011).
2. There are very few easily applied methods of long-term marking dogs that have been vaccinated. This means that even under a supposedly 'selective' cull targeted at unvaccinated animals, there is a relatively high chance of vaccinated dogs being killed, thus reducing the overall vaccination coverage and jeopardising the success of the programme.
3. New dogs move into the area or are adopted after a cull, to replace those that have been removed. These animals are usually unvaccinated, further diluting the vaccinated population and reducing the effectiveness of vaccination efforts.

On the other hand, the territorial behaviours of dogs, including 'roaming' and 'community' dogs (ICAM, 2007) makes maintaining a stable population of vaccinated dogs the most effective barrier to the spread of rabies and thus the fastest way to eliminate this disease (WHO, 2013).

Much of WSPA's field work under the campaign to date has been concentrated in Asia and Africa, due to their high human and animal rabies burden. Additionally, the two major Asian political blocs, the Association of Southeast Asian Nations (ASEAN) and the South Asian Association for Regional Cooperation (SAARC), both aim to eliminate rabies from their member states by 2020.

The type of support that WSPA offers to governments through the campaign varies according to factors such as the specific circumstances of the location and the availability of other sources of funding and support, but has so far included:

- drawing on central hubs of canine rabies expertise and forging strategic global partnerships
- providing technical advice on mass dog vaccination and animal welfare considerations
- providing training on catching, handling and vaccinating dogs
- support with planning and implementing mass dog vaccination programmes
- targeted financial support, such as the provision of dog vaccines
- sharing the success of established programmes (e.g. in Latin America), through case studies and the organisation of technical/study visits.

In each case, WSPA's aim is to support the government concerned in developing and running a sustainable programme of humane and effective rabies control.

## Humane Rabies Control in Asia

### Case Study: Bali, Indonesia

Even before the Red Collar campaign was launched, WSPA was instrumental in establishing and funding the first island-wide programme of mass dog vaccination in Bali, one of Indonesia's key tourist destinations. The programme is now widely recognised for its success in controlling human and canine rabies.

The Bali programme was established in response to an outbreak of rabies on the island - one of only about a

third of Indonesian provinces that had previously been classified as rabies-free. A combination of limited dog vaccination and culling of roaming dogs failed to control the disease, which spread rapidly across the island.

In 2010, working with WSPA and local partner, the Bali Animal Welfare Association (BAWA), the Provincial Government agreed to trial a programme of mass vaccination instead of culling dogs. The programme was run first as a pilot in one regency, and then island-wide, with teams led by local veterinarians being trained to catch and vaccinate dogs house-to-house. Rabid or suspect animals were humanely euthanased.

Over a six-month period, 70 per cent of the island's total dog population was vaccinated (approximately 210,000 from an estimated population of 300,000 dogs) resulting in a 35% decrease in human rabies deaths and a 76% decrease in canine rabies cases (Haesler et al., 2012).

Since then, the Balinese Provincial Government, with the support of the central Indonesian Government and the United Nations Food and Agriculture Organisation (FAO), has fully adopted the programme. Mass dog vaccination has continued and coordination between animal and human health agencies has improved, with a novel system of 'integrated bite case management' having been introduced to improve both the sensitivity of animal surveillance and the clinical management of human bite cases (Pudjiatmoko et al., 2013). As at September 2012, only 7 human rabies deaths had been recorded in Bali, compared to 83 at the height of the outbreak in 2010 (FAO, 2012).

### Other Work in Southeast Asia

WSPA has partnered with the Global Alliance for Rabies Control (GARC) and the United Nations FAO to support the Indonesian Government in establishing two further humane rabies control programmes, on the islands of Nias and Flores, respectively. The programmes, both of which are due to launch in 2014, will involve working with local authorities to conduct mass dog vaccinations, collect data on the impact of the vaccinations on rabies cases in both dogs and humans and educate communities on rabies control and avoidance. This will further build local capacity for the Indonesian Government to move towards a nationwide policy of humane rabies control, in line with ASEAN's goal of eliminating rabies from its member states by 2020.

In the Philippines, WSPA is supporting a project with GARC and local authorities to share expertise in conducting mass dog vaccination and encouraging responsible pet ownership practices between two

municipalities in Metro-Manila. In Vietnam, which is the lead country for ASEAN's rabies elimination goal, WSPA plans to work with the Government and the United Nations FAO in 2014, supporting pilot projects in effective and humane rabies control that can be expanded within the country and also promoted to other ASEAN member states.

## Bangladesh

In Southern Asia, the Government of the People's Republic of Bangladesh has been making significant progress towards implementing a comprehensive, nationwide programme of humane rabies control.

There are estimated to be more than 2,000 human deaths from rabies in Bangladesh each year, with 99% of cases being transmitted by dogs and an annual rabies incidence of 1.25 per 100,000 of population. The dog population is estimated to be around 1.2 million dogs, approximately 83% of which are stray (Department of Livestock Services, Bangladesh, 2010). Previous attempted control methods have included killing dogs, limited vaccination of pet dogs and providing treatment for dog bite victims. Until recently, however, there was a lack of multisectoral involvement, no programme of mass dog vaccination, difficulties in accessing safe and effective vaccines for humans and a lack of resources and diagnostic facilities.

Since 2010, authorities in Bangladesh have developed and are implementing plans to reduce human mortality due to rabies to less than 1 per million of human population and animal mortality to less than 10 per million animals by 2020. This includes a rabies elimination strategy with four key elements:

- Advocacy, Communication and Social Mobilisation (ACSM)
- Management of dog bites (human post-exposure treatment)
- Mass dog vaccination
- Dog population management

Short, medium and long term targets have been determined for the completion of activities within each category, and committees established from national to district level to oversee implementation of the strategy.

Activities undertaken so far have included:

- Piloting, followed by scaling up to national level, effective treatment for dog bite victims. This has



*WSPA veterinarian, Dr Dananjaya Karunaratna, oversees training and dog vaccinations in Cox's Bazar, Bangladesh, in 2012. The government teams have 7 members (1-2 vets to vaccinate, 1 coordinator and 3-4 animal control officers to catch and handle the dogs). Photo credit/copyright: WSPA*

consisted of procuring and supplying modern tissue culture anti-rabies vaccine and immunoglobulin, training doctors and nurses and establishing dog bite management centres at district hospitals in all 64 districts of the country;

- Advocacy meetings;
- Piloting mass dog vaccination, followed by capacity building to deliver it nationwide (see below);
- A national dog population survey;
- Dog sterilisation in some parts of Dhaka City.

In 2011, and again in 2012, WSPA worked with the Government to humanely vaccinate over 70 per cent of the estimated 4,000 dogs in Cox's Bazar, to trial mass dog vaccination for rabies control in a local context. The Government also ran pilot projects in Satkhira Municipality and a rural sub-district.

In 2013, a national action plan for mass dog vaccination was approved and in capacity building under this, tens of thousands of dogs were vaccinated across Rangpur, Rajshahi, Dhaka and Sylhet in the northern half of the country. Vaccines and some funding have been secured through multisectoral collaboration and support from international partners.

Establishing a national zoonoses control committee and strategic action plans, as Bangladesh and some other countries have, can be a useful way to achieve cross-agency support and programme sustainability.



*A dog is given a red collar to show that he has been vaccinated against rabies in Cox's Bazar, Bangladesh, while his owner and family look on. Photo credit/copyright: WSPA.*



*WSPA veterinarian, Dr Dananjaya Karunaratna, catches local dog Rocky in a net. Dana is demonstrating humane net handling techniques to the vaccination team. Photo credit/copyright: WSPA/Mahmud.*

The momentum to develop and implement such a programme can come, however, from either the human health or the animal health sector. In Bangladesh, for example, although rabies control efforts were initially led by the Ministry of Health, veterinarians were recruited and trained to oversee the implementation of the programme from the outset. Some of those involved in the initial programme at Cox's Bazar have now been contracted - with WSPA support - to oversee the launch of planned nationwide mass dog vaccination in 2014.

## Humane Rabies Control in Africa

### Zanzibar

In 2009, building on previous successful cat and dog population management projects, the government of Zanzibar requested assistance from WSPA to help eliminate rabies from the archipelago. The islands had

once been free from the disease but it had been reintroduced in April 1991 in Unguja Island and in 1999 in Pemba Island and since become widespread and endemic throughout Zanzibar.

Building on lessons learnt from case studies around the world and current best practice, an integrated cross-sectoral strategy was developed that fitted the local socio-political environment. The pillars of this programme are as follows:

- Establishment of a Rabies Control Unit within the Department of Veterinary Services
- Conducting a dog census and demographic survey to establish a locally credible baseline
- Close working relationships with other ministries: Public Health, Education, Local Government
- The creation of programme ownership and buy-in amongst key stakeholders; district veterinary service providers, local administrators and leaders and dog owners
- Capacity building of service providers
- The development of a suitable vaccination delivery system with appropriate logistical support
- The development of adequate local surveillance capacity
- Developing a monitoring and evaluation system and the tools and personnel training to support it.

To ensure adequate sustainability of the programme, review and revision of relevant policy and legislative frameworks have also been undertaken.

The programme in Zanzibar has two phases:

- Phase I: 2009 -2012 - rabies and dog population management programme
- Phase II: 2013 -2104 - rabies elimination project (first part ending April 2014)

Since the programme was initiated, human deaths from rabies have reduced from 6 in 2008 to 0 as of September 2013, with 7 dog and 5 cat suspect rabies cases last year. (Mudoga, E., 2014, pers. comm., 7 January 2014).

### Kenya

The Government of Kenya has fully embraced the concept of 'One Health'. Having recently been challenged by a number of zoonoses, including rabies, rift valley fever,

## The Solution to Rabies: Mass Vaccination

©WSPA / Andrew Morgan

*Rabies is responsible for approximately 55,000 human deaths per year; 99% of which result from the bite of a rabid dog.*

*People and dogs are needlessly dying due to rabies, states the World Society for the Protection of Animals in the lead up to World Rabies Day (28th September). This loss of life is tragic and entirely preventable with mass dog vaccination as a key solution to helping solve the problem.*

*The World Health Organisation estimates that rabies costs a staggering \$6 billion USD annually worldwide. But much of this money is wasted on temporary or failing 'solutions' such as the culling of dogs.*

*An economic analysis of rabies on the Indonesian island of Bali demonstrates that culling is ineffective, cruel and expensive and that the elimination of rabies is possible if the focus is on prevention via mass dog vaccination. Over a 10-year period, this could save up to \$16 million USD in Bali as the need for treatment after a bite from a rabid dog declines. Globally this solution would not only save money, but would also save thousands of people and animals from an unnecessary death.*

*There are still hot spots that pose an alarming risk to rabies in regions of Latin America, Asia Pacific and Africa, and more surprisingly in mainland Europe for the first time in thirty years, following a widely-reported incident in Spain in June of this year. Due to mass dog vaccinations not implemented in some of these regions, the response by many*

*of the governments and communities is to brutally cull dogs. This is often mistakenly perceived as the 'quick fix' solution, regardless of any visible symptoms of disease in the dogs.*

*WSPA CEO, Mike Baker says: "Rabies is a forgotten disease - many people assume they are not at risk, yet Spain, rabies-free for decades, has had a recent outbreak scare. We must tackle this disease in a way that does not see the needless and inhumane killing of dogs; mass dog vaccination is key to that."*

*Since 2007, WSPA has been working with and supporting governments, partners and local communities to change behaviour from culling to vaccinating dogs. Evidence from our work demonstrates that the humane alternative of mass dog vaccination serves as the most effective and economical method of controlling canine rabies. By removing the main source of infection, deaths of dogs and people in response to rabies are vastly reduced.*

*Moving towards a rabies free future, the World Society for the Protection of Animals and the Global Alliance for Rabies Control (GARC) are delighted to announce the signing of a global memorandum of understanding (MOU) to complement efforts to combat rabies across the world.*

*A rabies free future will leave culling behind and adopt humane mass dog vaccination as part of a wider 'One Health' approach to save peoples' lives as well as protecting animals.*

~ WSPA International News, Jul 11, 2013

highly pathogenic avian influenza and brucellosis, the Government established the 'Zoonotic Disease Unit' (ZDU), a collaboration between the Ministry of Health and Ministry of Agriculture, Livestock and Fisheries. The ZDU undertook a prioritisation exercise where rabies and brucellosis emerged at the top of the list. To address the rabies challenge the ZDU is developing a 'Strategic Plan for the Elimination of Rabies in Kenya' (SPERK) which is close to finalisation. In the process of developing the SPERK the government of Kenya consulted both international and local subject matter specialists, one of which was WSPA. It is also envisaged that WSPA will be involved in pre-testing the SPERK in selected pilot counties.

### Sierra Leone

Rabies is rampant in Sierra Leone but drastically underreported. WSPA has been working in Freetown with Sierra Leone Animal Welfare Society on dog issues for thirteen years, with rabies vaccination being one of the key activities. The next phase will be to engage the relevant competent authorities in developing a

comprehensive rabies elimination strategy. The Ministry of Agriculture, Forestry and Food Security, Ministry of Health, Ministry of Education and the Freetown City Council have all committed to supporting a programme aligned to current best practice.

### The Role of Veterinarians in Humane, Effective and Sustainable Rabies Control

Regardless of whether human or animal health agencies take the initial lead in establishing and implementing rabies control programmes, the veterinary profession has a key role to play through:

- Providing training and supervising the animal welfare aspects of mass dog vaccination
- Using veterinary networks to ensure country-wide coverage
- Administering humane euthanasia of animals where appropriate

- Private veterinarians encouraging their clients to vaccinate (and sterilise) their animals
- Promoting responsible pet ownership.

In 2011, WSPA and the Commonwealth Veterinary Association signed a memorandum of understanding which will provide a strong foundation for the two organisations to work together more closely in future on humanely controlling and eliminating rabies.

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## Microbial Quality, Composition and Keeping Quality of Raw and Heat Treated Liquid Milk in Central Province of Sri Lanka

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### Abstract

Hygiene, composition and keeping quality of milk products are most important elements in public health and nutrition but not easily achievable in hot tropics. Total Viable Counts of raw milk at the primary production was low at large-scale producers (14.29%) and high contamination observed among medium-scale (83.33%) and small-scale (18.18%) with the mean of  $10^6$  CFU/ml. Presence of coliforms in milk just after pasteurization and commercially available pasteurized products strongly reflect malpractices and poor hygiene in the production

process. Ineffective pasteurization and long holding of raw milk and pasteurized milk have caused the increase of titratable acidity and the same has increased due to high temperature applications (UHT and Sterilization). There was significant reduction in the amount of fat and protein in UHT milk while ensuring the hygiene. 42.86% of the commercially available pasteurized milk samples and 100% of sterilized milk samples exceed the acidity limit 0.18%. Management technologies and practices at different producers are crucial factors in determining the microbiological, compositional and keeping quality of raw and heat treated liquid milk.

## Keywords

Microbiological quality, composition, keeping quality, Heat Treated Liquid Milk, Small, medium, large-scale producers

## Introduction

Milk contains numerous nutrients and it makes significant contribution to requirement of human body for essential nutrients such as calcium, Vitamin D, protein, Potassium, Vitamin A, Vitamin B 12, Riboflavin, Niacin and Phosphorus (Ellen *et al.*, 2013). It is also described as wholesome food because it contains protein, sugar, fat, vitamins and minerals (Enb *et al.*, 2009). Milk consumption is associated with a reduced risk of osteoporosis, colorectal cancer and type 2 diabetes (Ellen *et al.*, 2013). However, milk serves as a good medium for the growth of many bacteria especially pathogenic organisms (Ruegg, 2003). Although milk and dairy products can transmit biological hazards there are effective control measures in processing that can minimize risk to human health (Creamer *et al.*, 2002).

Pasteurization, sterilization (in bottle) and UHT (Ultra-High-Temperature) treatment incorporated with aseptic packing are such control measures. Sterilization (in bottle) has a bactericidal effect greater than pasteurization. It gives the processed milk a longer shelf life although it does not result in sterility. The product has a cooked flavour and a pronounced brown colour due to long holding time at elevated temperature. Pasteurization reduces the number of viable pathogens so they are unlikely to cause diseases (Bylund, 1995). Ultra-high temperature (UHT or ultra-heat treated) is also used for milk treatment. UHT processing holds the milk at a temperature of 135-150°C for 2-10 seconds to achieve commercial sterility (Montilla *et al.*, 2005).

The majority of the national milk requirement in Sri Lanka is produced in the Central Province of the country (DAPH, 2014). The milk is supplied by small-scale, medium-scale dairy producers and large-scale commercial dairy farms. The microbiological, physicochemical, compositional quality of these producers might be varying due to differences in processing practices & technologies along primary production to storage of finished products.

Poor initial milk quality, faulty processing, problem in preservation at the consumer side may results into microbial contamination in milk and thus there are great chances of deterioration of milk much prior than the

recommended preservation time (Karim & Day, 2013). The objective of this study was to observe the microbiological, chemical and compositional quality of raw and heat treated milk supplied by the different producers.

## Materials and Methods

### Collection of Samples

Raw, pasteurized and UHT milk were collected from small, medium-scale processing units, large-scale processing centers and super markets in the Central Province of Sri Lanka. Out of 69 samples there were 24 raw (Cow 18, Buffalo 2, Goat 4), 17 just after pasteurization (Cow15, Buffalo 1, Goat 1), 3 cow milk samples pasteurized and stored in vats from a processing center, 12 UHT Cow milk and 7 pasteurized cow milk from super markets and 6 in bottle sterilized (Goat 4, cow 1, Buffalo 1) samples. For laboratory analysis collected samples were transported immediately by maintaining cold chain.

### Microbiological Analysis

Total Viable counts of the samples were examined on Plate Count Agar with the serial dilutions of the samples and incubated at 37°C for 24 hrs. After incubation total viable counts of the samples were calculated counting the colonies on the plates which having colonies in between 30 to 300.

Coliform counts of the samples were determined according to ISO 4832:2006 on Violet Red Bile Lactose (VRBL) agar by pour plate method. Plates were incubated at 37°C for 24 hrs. Characteristic colonies were counted and if required few colonies were confirmed by fermentation of lactose. Coliform count was expressed as colony forming units per milliliter (CFU/ml).

### Chemical Analysis

The parameters tested for the chemical analysis were pH and titratable acidity. The pH value of milk was determined by using a digital pH meter. Standardization of pH meter was carried out using standard buffer solutions of pH 4 and 7. Titratable acidity of the samples was tested according to AOAC method.

### Composition Analysis

Raw, pasteurized, sterilized and UHT milk samples were examined for Fat and Protein levels. Milk fat percentage was determined by the Gerber method and protein was estimated by Kjeldahl method.



**Table 1: Microbiological Analysis of Milk Samples**

Product	Total Viable Count (CFU/ml)			Coliform Count (CFU/ml)		
	Minimum	Mean	Maximum	Minimum	Mean	Maximum
Raw milk	$4 \times 10^2$	$2.62 \times 10^6$	$1.81 \times 10^7$	$3 \times 10^1$	$2.31 \times 10^5$	$3.5 \times 10^6$
Just after pasteurisation	0	$2.75 \times 10^5$	$2 \times 10^6$	0	$9.8 \times 10^1$	$1.3 \times 10^3$
Pasteurised and stored in vats	$3.6 \times 10^4$	$4.1 \times 10^5$	$1 \times 10^6$	$2.5 \times 10^2$	$2.69 \times 10^5$	$2.9 \times 10^6$
Pasteurised and commercially available	$3 \times 10^4$	$4.81 \times 10^5$	$1.8 \times 10^6$	$3 \times 10^1$	$1.007 \times 10^3$	$2.19 \times 10^3$
Sterilization (In bottle)	0	$9.02 \times 10^3$	$5.12 \times 10^4$	0	0	0
UHT milk	0	0	0	0	0	0

**Table 2: Percentage of Microbiological Contamination at Small, Medium and Large-scale Producers**

Product	Total Viable Count (% contamination)			Coliform (% contamination)		
	Small	Medium	Large	Small	Medium	Large
Raw milk	18.18	83.33	14.29	100	100	100
Just after pasteurisation	0	66.67	0	50	50	0
Pasteurised and stored in vats	-	100	-	-	100	-
Pasteurised and commercially available	100	-	100	100	-	100
Sterilization (In bottle)	66.67	100	0	0	0	0
UHT milk	-	0	0	-	0	0

\* Microbiological limits of pasteurized milk (TVC 30000 CFU/ml, Coliform 0 CFU/ml)  
 \*\* Microbiological limits of Sterilized milk (TVC 0 CFU/ml, Coliform 0 CFU/ml)

**Table 3: Keeping Quality Analysis of Milk Samples**

Product	pH			Acidity (%)			% exceed limits (0.18%)
	Minimum	Mean	Maximum	Minimum	Mean	Maximum	
Raw milk	6.28	6.63	7.5	0.12	0.185	0.23	45.83
Just after pasteurisation	6.32	6.58	7	0.14	0.17	0.26	17.65
Pasteurised and stored in vats	6.54	6.54	6.54	0.17	0.17	0.17	0
Pasteurised and commercially available	5.38	6.22	7	0.12	0.58	1.6	42.86
Sterilization (In bottle)	6	6.48	6.7	0.2	0.8	1.6	100
UHT milk	6.38	6.49	6.71	0.12	0.45	1.6	25

## Results

Available heat treated milk in Central Province of Sri Lanka was from producers that have different technical applications for heat treatment. Thus the Total Viable Counts and Coliform Counts of the samples were varying as shown in Table 1. Contamination of raw, pasteurized, sterilized and UHT milk at different producers are elaborated in Table 2.

Keeping quality of the samples at the time of tested was presented by pH and titratable acidity. The acidity

development with the storage and type of product is depicted in the Table 3.

Nutritional composition of raw and heat treated milk is elaborated in the Table 4 and fat and protein values of UHT milk is greatly affected in comparison to pasteurized and raw milk.

## Discussion

Isolation of bacteria from the milk indicates that milk may be contaminated from udder of animals,

**Table 4: Composition of Raw and Heat Treated Liquid Milk**

Product	Fat (g/100g)			Protein (g/100g)		
	3.3* (3.1-3.3)**	3.9* (3.3-4.5)**	7.5* (5.3-9)**	3.3* (3.2-3.4)**	3.4* (2.9-3.8)**	4* (2.7-4.6)**
	Cow	Goat	Buffalo	Cow	Goat	Buffalo
Raw milk	4.79	4.43	6.65	3.51	3.95	3.4
Just after pasteurisation	4.11	3.8	5.9	3.42	4.1	3.3
Pasteurised and stored in vats	4.3	-	-	3	-	-
Pasteurised and commercially available	3.47	-	-	3.03	-	-
Sterilization (In bottle)	-	4.63	6	-	4	3.6
UHT milk	2.33	-	-	2.96	-	-

\* Standard average  
 \*\* Standard range

utensils used for milking, the water used for washing and contamination at various stages of milk procurement, processing and distribution. Therefore, microbial content in milk is a major factor determining its quality (Rogelj, 2003). Total Viable counts of the raw milk samples showed a range of  $4 \times 10^2$  -  $1.81 \times 10^7$  CFU/ml and the hygienic limit ( $1 \times 10^6$  CFU/ml) was exceeded in 33.33% (medium-scale 83.33%, small-scale 18.18%, large-scale 14.29%) of samples. All the raw milk samples were contaminated by coliform bacteria (medium-scale  $1 \times 10^2$  -  $3.5 \times 10^6$ , small-scale  $7 \times 10^1$  -  $5.24 \times 10^5$ , large-scale  $3 \times 10^1$  -  $1.36 \times 10^4$  CFU/ml).

The presence of coliform bacteria just after pasteurization ( $0$  -  $1.3 \times 10^3$  CFU/ml) indicates the ineffective pasteurization (small-scale  $0$  -  $1.3 \times 10^3$ , medium-scale  $0$  -  $1.1 \times 10^2$ , large-scale  $0$  CFU/ml) and it may have increased due to poor processing and handling conditions. The UHT treatment which takes place in a closed system prevents the product being contaminated by air borne bacteria and tested UHT samples were negative for bacterial contamination. Capping of the sterilized milk bottles are done in an open environment by small and medium scale producers and the observed contamination (small-scale  $0$  -  $9 \times 10^2$ , medium-scale  $1.94 \times 10^3$  -  $5.12 \times 10^4$ , large-scale  $0$  CFU/ml) may be due to airborne bacteria.

As (Bylund, 1995), fresh milk has a pH normally falling between 6.5 and 6.7. Sour milk has a pH of 4.6 and lower. Mean pH of 6.5 was observed in all the milk samples except commercially available pasteurized milk and UHT treated milk. The presence of lactic acid and high acidity in milk is an indicator of quality and express its age and bacterial activity

and it is measured by titratable acidity (Griffiths *et al.*, 1988; O'Mahony, 1988). The degree of bacterial contamination, the temperature at which the milk is kept and holding time are the chief factors influencing acid formation. Maximum value of titratable acidity (0.18%) has been exceeded in 45.83% of raw milk samples (Large-scale 71.43%, medium-scale 66.66%, small-scale 36.36%). Due to ineffective pasteurization bacteria can still remain and cause high acidity in milk. Hence 17.65% (small-scale 30%, medium-scale 0%, large-scale 0%) of just after pasteurization samples showed deviation from the acceptable pH values. Pasteurized and commercially available 42.86% of samples that were collected from super markets exceeded the acceptable acidity levels ranging from 0.12% - 1.6%. Both commercially available pasteurized milk and milk which is pasteurized and stored in vats for downstream processing indicated that there is a storage effect on the total titratable acidity. When milk is heated at a temperature above 100°C and subsequently stored, lactose is degraded to acids (Swartzel, 1983; Fox and McSweeney, 1998) and it corroborates with the acid development of sterilized and UHT milk samples

Fat and protein percentage of different heat treated milk samples of different species are shown in Table 4 and the significant reduction of fat and protein in UHT treated milk samples are may be due to the heat resistant enzymes which are causing lipolysis and proteolysis in UHT milk (Hassan *et al.*, 2009). Pasteurization which is less affective for physical and chemical properties of milk (Bylund, 1995) has ensured the nutritional composition

## Conclusion

This study reveals that the microbiological, compositional and keeping quality of the different heat treated samples are varying among small-scale, medium-scale and large-scale producers. Though UHT treated products secure the hygiene, the nutritional value reduction is unprotected. Ineffective pasteurization and post pasteurization contamination is common in small-scale and medium-scale producers. Therefore, the management technology has to be improved in order to achieve the better quality.

## Acknowledgement

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## World Society for Protection of Animals (WSPA): A Strategic Partner in Animal Welfare for the Veterinary Profession

In April 2013, The World Society for the Protection of Animals (WSPA) and Commonwealth Veterinary Association (CVA) formalised a memorandum of understanding (MOU) to become a strategic partner and offer expert knowledge on animal welfare issues and regularly contribute to the welfare section of this journal.

WSPA is a global organisation with expertise across a broad range of welfare issues affecting both domestic and wild animals. WSPA thrives on building robust solutions based on evidence to improve animal welfare, which in turn involves providing practical options for veterinary professionals. WSPA's current work involves four broad campaign areas. These are:

1. Ending the inhumane culling of dogs by implementing mass vaccination as a means of canine rabies control, and promoting humane dog population management and responsible pet ownership programmes.
2. Humane and sustainable agriculture
3. Disaster management

4. Welfare of wild animals; oceans, wildlife trade and ending the captivity of bears

In this edition Beryl Mutanono-Watkiss, WSPA's Director for the Ending Inhumane Culling programme, outlines the work on canine rabies in response to culling and dog population management and Ruth De Vere, Head of Education explains the development of the 3rd edition of the animal welfare course.

Future editions will introduce other members of the WSPA team and include a variety of articles relating to WSPA and to areas of animal welfare concern. If you have an animal welfare related area, topic, ethical or legal issue you would like discussing in this journal then please contact WSPA.

You can find out more about WSPA by visiting the website: [www.wspa-international.org](http://www.wspa-international.org). For detailed information on animal welfare related issues visit the Animal Mosaic website: [www.animalmosaic.org](http://www.animalmosaic.org), and join the expanding community in animal welfare.

~ Joe Anzuino, WSPA

### WSPA, Welfare and a Strategy directed at the Veterinary Professional

WSPA is committed to developing and supporting the over-arching role of the veterinary profession in animal welfare. They aim to make animal welfare a cross cutting priority that is seen as important by decision makers as issues such as animal health, food safety, the environment and sustainable agriculture and livelihoods.

Veterinary professionals, including veterinarians and veterinary para-professionals such as animal health assistants or technicians, have a unique position in relation to animal welfare. For example, vets work with all animals and they have legitimate and legal authority to carry out various roles in relation to animals. They have the opportunity to improve animal welfare in many situations from administration, to direct treatment and preventative health, to affecting policy at national and international level. They can and should have a role as

advocates for animals underpinned by professional knowledge, integrity and compassion. WSPA aims to support and motivate veterinary professionals to function effectively for animal welfare so that:

- Welfare concerns are being demonstrated by an increasing number of veterinary organisations at international, regional and national level, in key areas such as policy statements, training initiatives and activities carried out.
- Veterinarians play an increasing leadership role on welfare related issues in society in general and at the government level. This contribution should be robust and effective by being coherent and consistent with ethical principles, welfare science and being practical.

- Veterinarians and students increase their use of educational resources to develop their practical understanding of welfare science, ethics and law.
- OIE welfare standards and guidelines are increasingly implemented at all levels (management, transport, slaughter) to improve welfare across all animal groups.
- Animal welfare is improved through effective health care service delivery and animal management from birth to a humane death.

Safeguarding animal welfare is integral for the veterinary profession and often included in a veterinary oath. Good health and welfare are closely linked. However, good physical health alone is not enough to ensure that an animal has a life worth living or a good quality of life.

There are various definitions of welfare and the World Organisation for Animal Health (OIE) definition of animal welfare is particularly useful as it is internationally accepted and is one that is used as a reference point. Here animal welfare is defined as 'how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress'.

So, at its most basic, decisions about animal welfare involve asking the two following questions. Firstly, is the animal healthy and secondly, does the animal have what it wants?

Good animal welfare requires disease prevention and appropriate veterinary treatment, shelter, management and nutrition, humane handling and humane slaughter or killing.

## Concepts in Animal Welfare

### Protecting Animals through the Next Generation of Vets

The World Society for Protection of Animals (WSPA) is marking its 10th year of education work by producing the 3rd edition of its Concepts in Animal Welfare tool - a comprehensive animal welfare teaching syllabus.

The Concepts in Animal Welfare (known as CAW) syllabus is being launched now and is a major teaching tool for veterinary institutions to ensure that animal welfare science and theory is taught accurately and effectively. It includes up to date scientific findings, bringing teachers and students the latest animal welfare research, law and teaching examples from all over the world. Academically robust and unbiased, CAW allows staff and students to examine all sides of the ethical debate.

This new edition includes new modules on disaster management as well as expanded modules on fish welfare. Additionally, the lecturers are supported with an advanced support pack of student activities and learning opportunities.

Previous editions of CAW have been used by over 750 faculties worldwide and it is a highly respected resource with endorsements from the Pan-American Veterinary Association and South-East Asian Veterinary School Association.

WSPA also has a successful partnership with the Chinese Veterinary Medical Association and Ministry of Education in China; who have announced they will be instating animal welfare and protection as a core course for veterinary students.

### Ruth de Vere, WSPA Head of Education speaks on Concepts in Animal Welfare

"High quality veterinary training is essential to enhancing the provision of veterinary care. If society wants vets to be the guardians of animal welfare and the practitioners of good welfare, then it must be included within their education from the outset.

World Society for the Protection of Animals (WSPA) recognises that many veterinary professionals were not trained in animal welfare science themselves and we are providing the most up to date, enlightening, and robust

teaching tools to allow educators to fulfil their job effortlessly.

I am very proud of this resource and the international support and endorsement from organisations and veterinary associations speaks for itself."

*Ms Ruth de Vere outlines her thoughts and vision for the future of animal welfare in education, specifically the Advanced Concepts in Animal Welfare (ACAW) programme.*



Ruth de Vere

Ruth worked as a teacher of Biology for 11-18 year olds for six years before training as a field primatologist. She joined the World Society for the Protection of Animals (WSPA) in December 2008 as Education Manager, before moving into the Head role 8 months later. Her role is to educate the consumers

and decision makers of tomorrow by getting animal welfare concepts onto teaching curriculums via a range of subjects. To that end, she works with her team to get animal welfare and good vet education out to schools, colleges, universities and training institutions globally. Her work is both grassroots and government based, that has involved her travelling to India, Vietnam, Thailand, China and Africa to lobby education ministers as well as communities.

## History and Vision

### What was the thinking behind the production of the WSPA Concepts in Animal Welfare syllabus?

As the concept of animal welfare gained recognition around the world, and as it developed into a science in its own right WSPA acknowledged that veterinary practitioners and other members of the veterinary community were at the forefront of delivering animal care. With such potential as major players in the enhancement of good animal welfare we recognised the need for veterinary students (and their lecturers) to receive effective training in animal welfare science, ethics and law to inform their values as professional practitioners. WSPA saw a niche and ten years ago we decided to do something about it.

Between 2000 and 2002, WSPA embarked on an attempt to encourage the introduction of animal welfare teaching into veterinary syllabuses by working with the University of Bristol to produce a teaching resource. The first edition of the Concepts in Animal Welfare was born.

It was distributed to over 750 universities worldwide, and over 350 veterinary faculties were involved in WSPA's training programme that run in parallel with the resource. Due to its popularity and international applicability, the resource was translated into 6 languages. In 2007, the content was revised and updated to reflect developments in the field of animal welfare science.

*A lecturer teaches clinical skills to veterinary students using alternatives to live animals in Kerala, India. (Copyright WSPA and JMICAWE)*

Six years on, the content has been amended, updated and expanded to demonstrate the growth of the discipline, and the demand by veterinary faculties. This 3rd edition (which has been launched in 2013 in English, followed by Chinese, Portuguese, Spanish and Thai translations in 2014) includes the latest peer-reviewed findings, and presents two brand new modules (on Animals in Disasters and an Introduction to the OIE) as well as extended content on fish welfare and a more user-friendly clustering of modules into appropriate subject areas. In addition to this, the lecturer support materials have been improved to provide the educator with a wider variety of best-practice teaching tools to enhance the learning experience of the students and ensure that the students are able to achieve the learning outcomes intended.

### Is Advanced Concepts in Animal Welfare (ACAW) a global programme?

ACAW is a truly international programme of work spanning over 20 countries and WSPA is proud of the successes and achievements it has made to date. The programme varies from region to region while we pilot tested a variety of approaches; therefore it is difficult to single out one place where the work is most strong.

However, in Latin America, we have developed an online course that runs for 10 weeks, is free for participants (who are all veterinary lecturers) and enables them to study animal welfare theory in detail. We have a variety of regional experts in the subject who act as tutors and assessors. In this way we are creating a growing cohort of educators who have an in-depth understanding and interest in the subject.

In South East Asia we have a group of 12 Key Drivers who represent faculties in 10 countries. They have partnered with us for over 2 years, and during that time they have been trained in WSPA's CAW tool, they are growing and developing the inclusion of animal welfare within their faculties, and they come together as a group to share experiences and collectively improve the animal welfare provision across the region. Our investment in them has also had an impact beyond our initial expectations - many see themselves (and are perceived by their peers) as relative experts in the field, and some have been asked to advise government bodies on welfare-related issues.

In Africa, we managed to formally include animal welfare within the Bachelor of Veterinary Medicine curriculum at the University of Nairobi, Kenya, Makerere University, Uganda and at Sokoine University, Tanzania. We provided extracurricular sessions to those students who would graduate before the new curriculum took hold.

*Are there any close relationships with veterinary institutions or organisations that you are particularly proud of?*

Organisationally, we have Memoranda of Understanding (MOU'S) with the World organisation for Animal Health (OIE), World Veterinary Association (WVA) and your good selves at the Commonwealth Veterinary Association (CVA) which is essential to our ACAW work and a huge step forward in enhancing veterinary education through animal welfare. However, it is our relationships with national and regional associations - relationships handled by the global ACAW team that I am most proud of. These relationships demonstrate the professionalism of the ACAW team, the strength of the 'product' we provide, and the credibility of WSPA.

The list of relationships includes those that endorsed the 3rd edition of CAW, among others: Commonwealth Veterinary Association (CVA), Federation of Asian Veterinary Associations (FAVA), South East Asian Veterinary School Association (SEAVSA), Federal Council of Veterinary Medicine, Brazil (CFMV), and Brazilian Veterinary Medical Association of Animal Welfare (AMVEBBEA).

*What is your vision for WSPA's Advanced Concepts in Animal Welfare (ACAW) programme for the next 5 years?*

WSPA believes education tackles the root cause of animal welfare issues by providing individuals with the knowledge, skills and power to think and act in ways that protect animals now and in the future.

WSPA Objective: A world where animal sentience and welfare is widely understood by society, resulting in lasting positive change for animals.

In the next five years I would like to see all WSPA regions develop a growing cohort of Key Drivers who are trained by WSPA in effective animal welfare teaching. They will be supported to gain additional qualifications in the subject so that the expertise remains in-country. I would like to see our partner faculties transformed into model schools where animal welfare theory is taught and good animal welfare is practiced in every element of

teaching and learning: e.g. the use of animals in educational scenarios should be drastically reduced and replaced by alternatives that enhance the learning experience and result in more competent and compassionate graduates.

### Assessing the impact of Typhoon Haiyan on Animals in the Philippines

Disaster response teams from the World Society for the Protection of Animals (WSPA) have been working in the Philippines to assess the needs of animals affected by Typhoon Haiyan, which struck the country on November 8, 2013.



*Watched by its owner, Olivia, Juan Carlos Murillo of WSPA examines a pregnant cow before administering vitamin injections in rural Antique Province, Western Visayas*

The teams have been providing assistance in Cebu Province the Bantayan Islands and in the Western Visayas, assessing the immediate and longer term needs in the areas, and helping to vaccinate and provide veterinary care for thousands of animals, both livestock and companion animals.

'The loss of animals can lock people into an endless cycle of poverty take away their ability to educate their children, expand their businesses and the freedom to make choices in their lives,' says WSPA. Helping to maintain the health and welfare of surviving animals is key to giving people a chance of recovering and resuming a normal life.

The charity is also working with local veterinary associations and faculties to train, equip and deploy veterinarians and others to the worst affected areas as part of teams of vets led by WSPA.

~ Veterinary Record, Nov 30, 2013

## Highlighting the Importance of Animal Welfare

at the 15th Australasia/Oceania Commonwealth Veterinary Association (CVA) Conference 2nd - 6th September 2013 Nadi, Fiji

Being one of the largest gatherings of veterinary professionals in the Pacific, the Commonwealth Veterinary Association (CVA) conference was a key event to bring animal welfare on the mainstream agenda in the Pacific. The World Society for the Protection of Animals (WSPA), having recently signed a Memorandum of Understanding (MoU) with the CVA in April of this year, attended the conference to support the initiatives of the CVA, to promote animal welfare as a step to improving the lives of animals and people in the Pacific and WSPA's leading resource on animal welfare; Animal Mosaic.



*WSPA Attendees at the CVA*  
*L-R: Dr David Bayvel, Scott Cantin, Kate Turner-Mann, Dr Hugh Wirth, Emily Reeves, Mike Baker and Dr Ian Dacre*

The President of Fiji opened the conference and in his speech reiterated the importance of animals and animal welfare for people in Fiji for health, food security and a key part in plans to promote and ensure sustainable development in Fiji setting the precedent for animal welfare for the remainder of the week. The proceedings then began with keynote addresses by Dr Abdul Rahman, President of the CVA and WSPA's CEO Mike Baker. In his speech, Mike spoke of global challenges and how, by mainstreaming animal welfare and including this as part of the solution, some of these challenges could be addressed for the benefit of animals and the people who rely on them.

The conference then split into two main work streams; the livestock scientific program and the companion animal management stream which continued into half of day two. Within the different streams, at the end of the session the participants formed working groups who then developed recommendations to feed into the conference recommendations. Dr Hugh Wirth in his role as a veterinarian in the profession for 50 years and WSPA International Board Member opened and then chaired the first day of the companion animal management stream.

The most important stream for the conference for WSPA was held on day three; animal welfare. Dr Hugh Wirth opened the session and then he was followed by our Chief Veterinary Advisor Dr David Bayvel who gave an overview of the growing recognition of animal welfare in the veterinary profession over the course of his career. Dr Ian Dacre gave a

combined presentation with Dr Elva Borja, from the SPC, on rebuilding livelihoods after a disaster by integrating animals and animal welfare into disaster preparedness and management plans. In the afternoon Dr Hugh Wirth was joined by a panel of eminent professionals on the future of livestock production in the Pacific. The conference broke into working groups that then developed conference

recommendations for the issues raised over the last three days. A recommendation that included animal welfare was proposed that recognises the fundamental importance of animal welfare and its links to animal health and production. WSPA applauds and supports the CVA's efforts to progress this key recommendation from the conference. On the last day of workshops WSPA was honoured to have Dr David Bayvel open the session and chair on dog population management with a presentation on the OIE dog population standards, an issue that WSPA in collaboration with other international animal welfare organisations has developed the ICAM Coalition Guidelines for humane dog population management.

WSPA held two side events in addition to the conference. The first was our second Livestock Emergency Standards Guidelines (LEGS) training with 25 participants from government and humanitarian aid agencies providing the participants with international guidelines on livestock interventions to assist animals and people affected by a humanitarian disaster. The second event was a workshop on addressing animal welfare in the Pacific after the CVA conference. For the day, which was opened by the Minister of Agriculture, WSPA invited representatives from local animal welfare organisations and regional experts who have worked extensively with animals and animal health in the Pacific. The group collectively identified nine key areas to address and increase animal welfare in the Pacific, of which WSPA will develop these into an action plan of initial steps to address animal welfare concerns in the Pacific, collaborating with organisations such as the CVA and SPC.

For any questions regarding WSPA, please contact Nicola Beynon ([nicolabeynon@wspa-asiapacific.org](mailto:nicolabeynon@wspa-asiapacific.org)).

~ Kate Turner-Mann, WSPA



# International News

## 150<sup>th</sup> Anniversary of the World Veterinary Association

The 31<sup>st</sup> World Veterinary Congress (WVC) took place in Prague (Czech Republic) from 17 to 20 September 2013. The WVC was marked by World Veterinary Association's 150 years Anniversary celebrations. Over 1350 delegates from 75 countries attended the WVC 2013.

The scientific programme included 11 parallel sessions covering every veterinary discipline; from companion to exotic animals, from wellbeing of animals to wellbeing of veterinarians.

A two-day Global Veterinary Seminar on Animal Welfare brought together specialists from different world regions to discuss the different aspects of Animal Welfare.

Dr. S. Abdul Rahman, President CVA presented a paper on "Role of Veterinary Services And Islamic Religious Authorities In Improving Animal Welfare at Slaughter". He also participated in the General Assembly of WVA.

The WVA also signed a Memorandum of Understanding with WSPA to promote animal welfare globally via agreed specific goals and actions.

The WVA-WHO-OIE-FAO 2<sup>nd</sup> Global Summit focused on strengthening institutional collaboration and cooperation between animal and public health in education and research.

Presidents' Assembly of the WVA was also held during the WVC 2013. The main issue on the agenda was the vote on the proposal to change the WVA Constitution and By-Laws with the aim to broaden membership, improve members' involvement and enhance dynamics and decision-making. After in-depth presentations and discussions on the proposal, it was adopted with 100% of the votes in favour.

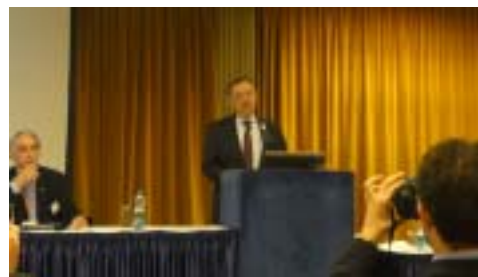
On the occasion of the WVA 150th Anniversary celebration, the WVA presented the John Gamgee Award to James Harlan Steele (USA), Milton Thiago de Mello (Brazil) and to Bernard Vallat (France) in recognition of their outstanding and exemplary services to the veterinary science and to the veterinary profession.

The WVC 2013 was concluded by a presentation from the Turkish Veterinary Medical Associations, the organizers of the 32nd WVC to take place in September 2015 in Istanbul, Turkey.



**WVA General Assembly**

*L-R: Drs Tjeerd Jorna, Past President WVA, Chiang Johnson, Vice President WVA, Faouzi Kechrid, President WVA and Jan Vaarten, Executive Secretary WVA*



**Dr Bernard Vallat addressing the Conference after receiving the John Gamgee Award**

### WVA Conference, Prague. Sept 2013



*L-R: Drs Olatunji Nasir, Past RR ECS Africa, S. Abdul Rahman and Gani Enahoro, President, Nigerian Veterinary Medical Association*



*L-R: Drs Clark K Fobian, President AVMA, S. Abdul Rahman and Peter Jones, President BVA*

## WSAVA and OIE Call for Action on Rabies

THE World Small Animal Veterinary Association (WSAVA) and the World Organisation for Animal Health (OIE) held a symposium in November 2013 to explore strategies to manage and eliminate canine rabies. The meeting culminated in the two organisations issuing a joint statement setting out a course of action to make progress in controlling the disease, which, despite being preventable, kills an estimated 60,000 people each year, many of them children.

The one-and-a-half day symposium, which was held at the OIE's headquarters in Paris, focused mainly on rabies in free-roaming dog populations and heard presentations from a number of researchers and others, based on their experiences of dealing with the disease in regions where rabies is endemic. The statement was developed on the basis of evidence presented during the meeting which, among other things, suggested that, while neutering campaigns might bring other benefits,



*Michael Day, Chairman of the WSAVA's One Health Committee, Bernard Vallat, Director-General OIE and Jolle Kirpensteijn, President WSAVA*

vaccination of dogs offered the primary means of controlling rabies.

## FAO, OIE and WHO issue Joint Statement on Rabies

The importance of vaccinating dogs to prevent rabies in people is highlighted in a joint statement issued by the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE) and the World Health Organization.

The statement, notes that 'community participation, education and public awareness are important elements of successful rabies control programmes, and mass vaccination of dogs is critical'. Noting that 'vaccinating at least 70 per cent of dogs breaks the cycle of transmission in dogs and to humans', it points out that elimination of rabies requires 'consistent and sustained commitment, underpinned by strong health and veterinary systems' and calls on the different sectors and disciplines involved to collaborate closely.

The three organisations issued the statement to coincide with World Rabies Day, which takes place on September 28 each year and is intended to raise awareness of a disease which, although preventable, kills an estimated 60,000 people each year many of them children. Initiated by the Global Alliance for Rabies Control in 2007, World Rabies Day continues to gather momentum. The theme this year is 'Rabies - understand it to defeat it' and the alliance reports that numerous events are planned around the world, ranging from local stray dog vaccination projects to national media campaigns. Among them is an educational initiative organised by the Faculty of Veterinary Medicine of Al Baath University in Syria, which handed out leaflets to children in refugee centres. Details of some of the many events, as well as more information about the disease itself, are available on the alliance's website, [www.rabiesalliance.org](http://www.rabiesalliance.org)

~ Veterinary Record, Sep 28, 2013

## India home to 103 billionaires; 6th largest globally

India has more number of billionaires than France, Saudi Arabia, Switzerland and Hong Kong and is home to the sixth largest group of super rich population in the world, says a report. Moreover, the country's financial capital Mumbai, with 30 billionaires, is among the top 5 'billionaire cities' globally, which was topped by New York that is home to 96 billionaires. Hong Kong, Moscow and London make the other top five with 75, 74 and 67 billionaires respectively.

Notwithstanding the number of billionaires in India having decreased between July, 2012 and June, 2013, India still enjoys a decent 6th position in the top 10 league with 103 billionaires. This list was topped by United States with 515 ultra-rich people, three times more than in China, which ranks second with 157 billionaires. Germany, United Kingdom and Russia make the other top five countries with a billionaire population of 148, 135 and 108 respectively.

~ Hindustan Times, Nov 07, 2013

## Rabies Confirmed in an imported kitten in France

Epidemiological investigations are underway in France after a case of rabies was confirmed in a two-month-old kitten imported from Morocco.

According to a report to the World organization for Animal Health (OIE) on 4 November 2013, the kitten had been imported with a certificate of good health that does not meet the regulatory provisions for the import of domestic carnivores from Morocco'.

The report stated that the kitten had been imported on 13 October 2013 and remained with one family in the Val d'Oise departement until 22 October 2013. It then ran away into the local neighbourhood and was taken in successively by two families on 24 and 25 October 2013. It was reported dead on October 28, having shown neurological signs for three days. Tests at the Institut Pasteur confirmed on October 31 that it had rabies.

Following the confirmation of disease, a control area was established to limit the movement of domestic carnivores, enhance the capture of stray animals and to allow for enhanced surveillance. French authorities say that carnivores that may have had contact with the kitten and which have not been properly vaccinated against rabies will be euthanased; carnivores that have been properly vaccinated will be monitored clinically for six months.

The French Ministry of Agriculture and Fisheries announced on October 31 that five people who had had contact with the kitten had been identified and had received preventive treatment. It appealed for anyone who may have had contact with the kitten, its mother or other kittens in the litter to contact a helpline. France was declared free of rabies in 2001. In 2011, a case of rabies was reported in the country in a two-and- a-half-month-old puppy that had-also been imported from Morocco.

~ Veterinary Record, Nov 9, 2013

### 7th International Colloquium on Working Equids

The World Horse Welfare will be hosting The 7th International Colloquium on Working Equids at Royal Holloway, University of London from 1-3 July 2014.

#### About the Colloquium on Working Equids

The Colloquium on Working Equids was established in 1991 and has been held every four years as a pivotal event for those involved in helping the world's 100 million working horses, donkeys and mules.

Bringing together development professionals, veterinary surgeons, academics, researchers and aid and welfare organisations, this Colloquium will focus on the emerging awareness of the link between the welfare of working equids and international development.

#### About World Horse Welfare

World Horse Welfare is an International charity with more than 85 years' experience helping horses around the world through education, campaigning and hands-on care. Since 1985, the charity has helped working equids and their owners in developing communities and has seen first-hand the essential role equids play in livelihood systems across Africa, Central America and Asia.

### New President for Sheep Veterinary Society

Dr. Fiona Lovatt was elected as the new President of the Sheep Veterinary Society at its autumn conference held in Edinburgh recently. Dr Lovatt succeeded Prof. Neil Sargison, who became senior vice-president, and was joined on the society's officer team by Jimmy Wilson, who was elected as junior vice-president.



Dr Fiona Lovatt

Dr Lovatt graduated from Bristol and worked in farm animal practice in north-east England until last year. She is currently the director of Flock Health, a sheep veterinary consultancy business, and a part-time clinical associate professor in sheep production medicine at the University of Nottingham. She advises sheep farmers and vets on flock health issues, as well as teaching veterinary students, developing sheep CPD and working on various sheep research projects.

~ Veterinary Record, Oct 12, 2013



## Commonwealth Veterinary Association - CVA Facebook Page

If you have an interest in our veterinary colleagues in the developing countries of the commonwealth you may be interested in the Commonwealth Veterinary Association - CVA Facebook Page, which has received in excess of 10,000 "Likes" and involved nearly every commonwealth country in the first six weeks since it was launched. This demonstrates the worldwide level of interest that exists in animal health and welfare and the veterinary profession at the grassroots level.

Posts covering a range of topics are being regularly fed into the Page. The posts cover CVA activities, upcoming events, opportunities from which followers may benefit, freely available resources, and general information with a bit of humour thrown in. Veterinarians and other interested people also have an opportunity to share their news and views through the page.

The Page is being continually improved upon so that it is useful and relevant to veterinarians and other interested people throughout the commonwealth. New ideas and feedback are always welcome to help make the page even better.

The CVA encourages you to share this information with your colleagues and friends so that they can benefit from the information, resources and discussions that are found on the Page. Access to the CVA Facebook Page is freely open to everybody and can be found by clicking on the link <https://www.facebook.com/pages/Commonwealth-Veterinary-Association-CVA/203118733200643>.

~ Dr Jeff Cave  
CVA Australian Councillor and  
CPD Co-ordinator

## Officers of CVA meet Director of Commonwealth Foundation

The Officers of the CVA, Dr. S. Abdul Rahman, President, Dr Karen Reed, Secretary and Dr. Bob McCracken, Programme Director met the Director of the Commonwealth Foundation Mr. Vijay Krishnarayan on 13 September 2013 at Marlborough House, London and discussed various issues pertaining to CVA especially the Commonwealth Grants. Mr Vijay Krishnarayan assured his support and encouragement to the efforts of CVA especially regards its projects in Africa and Asia.



*L-R: Dr Bob McCracken, Mr. Vijay Krishnarayan, Dr S. Abdul Rahman and Dr Karen Reed*

### Commonwealth Veterinary Association registered as a Charitable Trust

The Commonwealth Veterinary Association, since its inception in 1967, had not been registered as an Organisation. Looking to the future, the CVA has recognised the need to acquire a registered charitable status. This reflects the CVA's philanthropic and social objectives. It is pleasing to report that the CVA, as from 1st January, 2014, is registered as a Charitable Trust under the Indian Trust Act 1982.

## Book & Journal Programme



Dr. Jeff Cave

The CVA Book Programme is coordinated by Dr. Jeff Cave

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The CVA Book Programme is coordinated by Dr. Jeff Cave in Australia. Books are donated by veterinarians in Australia and New Zealand, all of whom are thanked for their generosity, without which the programme would not exist. They are available for distribution free of charge to graduate veterinarians in CVA member countries in good standing. Priority is given to requests from institutional libraries, such as veterinary schools and veterinary associations, and requests from individuals are met as funds permit. Postgraduate students are encouraged to submit their requests through the librarian at their institution, to ensure that the books will be widely available. Because

of budgetary constraints and steeply rising mailing costs, the number of books which can be shipped is normally restricted to up to 20 titles for institutions, and up to 5 titles for individual veterinarians in any one year. Individual veterinarians are encouraged to share their books with colleagues in their area if possible.

Requests for books should indicate the required subject areas and/or preferred titles where possible, and they should include the mailing address to which the books should be sent. The latter should be abbreviated as much as possible in order that it may be accommodated in the limited space provided on the customs declaration. It is suggested that those wishing to submit a request should first obtain a copy of the current inventories of books available by contacting, preferably by e-mail, Dr. Cave (see above for contact information). Shipments are made by surface mail, and may take several months to reach their destination. The recipients are requested to acknowledge the safe arrival of the books.

During the period January - December 2013, from Australia and New Zealand, 251 books were sent to 9 different countries as follows: East Timor 65, Belize 58, Uganda 54, Trinidad and Tobago 28, Fiji 18, Pakistan 14, Papua New Guinea 7, India 6 and Ghana 1.

The current inventory in Australia and New Zealand comprises nearly 750 books with over 420 different titles. Most of the books were published during the last 20 years; older texts, for which more recent editions are available, are discarded each year. Most areas of veterinary medicine are covered.

January 2013

JEFF CAVE  
Coordinator – CVA Book Programme

### 18th CVA Asian Regional Meeting and Conference

The 18th CVA Asian Regional Meeting and Conference will be held from 20<sup>th</sup> - 24<sup>th</sup> February, 2014 in Bangalore, India. The theme of the main Conference is, "***Advances in Veterinary Research: Impact and Opportunities***". In addition, there will be Satellite Conferences on "***Progress in Animal Welfare***" and "***Canine Rabies Control***".

This Conference is jointly organised CVA, Veterinary College, Karnataka Veterinary, Animal and Fisheries Sciences University (KVAFSU); and National Institute of Animal Nutrition and Physiology (NIANP) in association with the University of Edinburgh's Royal (Dick) School of Veterinary Studies, UK.

This conference is supported by The World Organisation for Animal Health (OIE), the Jeanne Marchig International Centre for Animal Welfare Education, World Society for Protection of Animals (WSPA), Global Alliance for Rabies Control (GARC), Association for the Prevention and Control of Rabies in India (APCRI), Crucell Holland bv, The Netherlands, Karnataka Veterinary Council (KVC) and Karnataka Veterinary Association (KVA).

The Conference also includes a Training Workshop on "***Direct Rapid Immunohistochemistry Test (dRIT) for Rabies Diagnosis***".



## The Fund

This fund has been established by the Commonwealth Veterinary Association (CVA) in conjunction with the Commonwealth Foundation to honour the contributions made by Mr. John Anderson and Dr. L.P.E. Choquette in establishing and promoting the activities of the Commonwealth Veterinary Association.

Financial support to match the funds contributed by the Commonwealth Veterinary Association and the several national and local veterinary associations throughout the Commonwealth may be provided by the Commonwealth Foundation.

### 1. Purpose

Its purpose is to provide financial assistance to:

1. Veterinarians who are members in good standing of their respective national associations to undertake short term study visits to schools, institutions or to undertake short term study courses in veterinary medicine, animal production or related areas in other Commonwealth countries.
2. Animal Health Assistants recommended by the appropriate CVA Council Member and Regional Representative, to undergo further short-term training at a school or institution in another Commonwealth country.

It is expected that such visits will promote professional and para-professional contacts and provide grantees with new knowledge and expertise in their respective fields of interest. Study proposals which will directly benefit the rural poor and disadvantaged will receive sympathetic consideration. All proposals will be expected to describe how they will benefit the home institution, veterinary organization and community. The visit is also expected to result in a broadening of cultural experience and horizons and to promote Commonwealth understanding.

### 2. Guidelines

1. Grants will be limited to persons with field experience and not holding senior positions.
2. The awards are not normally available for University academic or research staff.
3. Preference will be given to related regions with 'south-south' movements being encouraged. In exceptional cases, visits to institutions outside the regions qualifying under south-south arrangement will be considered as long as the cost of the visit does not exceed the allocated fund award (Aus \$ 3000). In exceptional circumstances and where approved by the President grantees may receive training in a non-Commonwealth country within that Region.
4. The study period should be preferably between 2-3 weeks.
5. Awards will normally be distributed equally amongst Regions, however, on occasion, the President may authorize additional awards to a particular Region in any one year.
6. The study visits will be financed at a maximum of Aus \$ 3000 including a prepaid air ticket for the least expensive and most direct route.

7. Grants are provided only for periods of concentrated study or training on a particular topic or activity and cannot be made for attendance at conferences, meetings etc., nor to underwrite a tour of visits to a number of institutions.
8. A report must be submitted to the Secretary CVA within three months of the completion of the study visit. At the completion of the study visit, the participant must receive a letter of release, which should clearly indicate duration of stay, and satisfactory completion of course. The letter should also confirm that at the time of departure, the participants have not left any debts unsettled. This requirement must be conveyed by the Regional Representative or Programme Director to the host institution before arrival of participant.
9. It will be necessary for the host institution to agree to assist in arranging suitable accommodation etc. affordable by the applicant.
10. Grantees will be expected to give one or two lectures at the host institution or veterinary association on aspects of animal health and production activities in their home country. These lectures should emphasize how their studies in the host country will benefit the rural poor and disadvantaged as well as their impact upon the environment.
11. These lectures and the discussions of topics, both professional and social, with the staff of the host institution or veterinary association will serve to further the aims and objectives of the Commonwealth Veterinary Association.

### 3. Applications

- i) There is a set Study Application Form/Application. Forms are available from the CVA Secretary, or through the CVA Website.
- ii) Applications should be submitted to the appropriate Regional Representative for processing, at least 6 months prior to the proposal visit.
- iii) The applicants should provide the following:
  - a) A complete curriculum vitae to the Regional Representative
  - b) Two passport size photographs
  - c) A letter of acceptance from the person who will supervise the study program in the host country
  - d) Evidence that the study has the support of his/her home institution or national association

### 4. Administration

- i) The Study Application Form with supporting documents must be sent to the appropriate Regional Representative
- ii) The Regional Representative will review the application and make a recommendation to the Secretary, CVA.
- iii) The Secretary, CVA will make a recommendation to the CVA President, who will make the final decision.
- iv) The Secretary, CVA will then inform the Regional Representative who will inform the candidate.

**Last date of submission of request to Council Members/Reg. Rep. is 30<sup>th</sup> Oct. 2014. RRs to submit their recommendations before 30<sup>th</sup> Nov. 2014 to the Secretary, CVA.**

 Asia

### Training of Livestock Farmers at Pattoki and Mandi Faizabad, Pakistan

Under the auspices of Veterinary College, University of Veterinary and Animal Sciences, Lahore, the CVA Councillor of Pakistan Dr. Aneela Zameer Durrani organized a one day Farmer's training camp at two villages near Lahore on 23rd December 2013. More than 300 farmers and 100 veterinary students participated in the training. In addition pharmaceutical and livestock feed manufacturers also participated.

importance of livestock in the rural community. Dr. Aneela Durrani who gave the key note address stressed the need for good management practices for profitable livestock farming. Dr. Irfan Asst Prof (UDL) emphasized the importance of vaccination in livestock farming for prevention of diseases. Dr. Muhammad Avais, Asst Prof, Department of Clinical Medicine & Surgery (CMS) emphasized the timely diagnosis of mastitis and demonstrated the "Surf Field Mastitis Test".



*Interacting with Farmers*



*Demonstration of Surf Field Mastitis Test*

Staff of the University Dr. Hassan Warraich, Country Head - Agriculture Sector Linkages Program (ASLP) Prof Dr. Massood Rabbani, Director University Diagnostic Laboratory (UDL), Dr. Irfan Asst. Prof (UDL) and Dr. Saad Ullah, Lecturer Livestock Production imparted expert advice to the farmers on good farm management practices, disease prevention, use of vaccines and disease diagnosis, especially Mastitis and silage and fodder conservation strategies.

In addition a quiz programme for farmers and students was also conducted during the discussion session and prizes distributed.

A second camp was organized the same day at Mandi Faizabad which was exclusively for farmers on the



*Farmers with Dr Aneela (in the centre)*



*Prof. Dr. Talat Naseer Pasha, Vice Chancellor UVAS (4th from right) at the Farmers Camp, Mandi Faizabad*

### New CVA Councillor of Sri Lanka

Dr. W.K.de Silva, President SLVA has been nominated as the CVA Councillor of Sri Lanka.



*Dr. W.K.de Silva*

At the 65th Annual General Meeting held in June 2013 the following Executive Committee members were elected for the year 2013/2014.

President	Dr. W.K.de Silva
President Elect	Prof. I.D. Silva
Vice Presidents	Prof. N.P. Sunil Chandra Dr. K.D. Ariyapala
Secretary	Dr. Athula Mahagama
Asst. Secretaries	Dr. S.S.P. Silva Dr. Sampath Lokugalapatti
Treasurer	Dr. Sumudu Kariyawasam
Asst. Treasurer	Dr. Ushan Pallegama
Executive Committee	Dr. Prabhath Samarathunga Dr. Janaka Amarakoon Dr. B.S.S. Perera Dr. Anil Pushpakumara Dr. W.M.P.B. Weerasinghe Dr. Bhagya Wickramasooriya
Ex-Officio	Dr. Nimal Chandrasiri Dr. Rasika Jinadasa Dr. Sumathy Puvanedirana

Dr. Ghazanfar, Lecturer (CMS) spoke about the economic loss due to parasitic burden in livestock and the need for proper deworming of animals.

Prof. Dr. Talat Naseer Pasha, Vice Chancellor UVAS appreciated the efforts of Dr. Aneela who had initiated this programme.

~ Dr. Aneela Zameer Durrani  
CVA Councillor Pakistan

### Mission Rabies in India

More than 45,000 dogs in India have been vaccinated against rabies in just 24 days, thanks to the efforts of a team of international volunteers and local people and organisations working on behalf of Mission



*A dog being vaccinated against rabies in Kolkata*

Rabies.

The aim of Mission Rabies, which is an initiative of Worldwide Veterinary Service (WVS) and is supported by a number of animal welfare charities, was to vaccinate 50,000 dogs in 10 rabies hotspots in India throughout September 2013. The mission culminated on 28 September 2013, World Rabies Day. Over the next three years, the project aims to target two million dogs across India.

Each dog that is vaccinated is marked on with paint or a collar and its location, gender and neuter status is recorded using a smart phone app. Owners who present their dog for 'vaccination receive a certificate, recording that their pet has been vaccinated.

The teams in India are being supported by an all-terrain mobile veterinary hospital, which incorporates an operating theatre, self-sufficient on-board accommodation for veterinary personnel.



# Australasia Oceania

## 15th Australasia/Oceania Commonwealth Veterinary Association Regional Conference

The above event was held in Nadi, Fiji from 2nd to 6th September, 2013 at the Tanoa International Hotel, around 1 km from Nadi International Airport on Fiji's largest island of Viti Levu.

This first CVA Regional Conference to be staged in Fiji was organized by the Fiji Veterinary Association and the CVA, through a Committee chaired by Dr Robin Yarrow, a Fiji national who previously served as CVA President and as a senior Fiji civil servant. Members of the Organizing Committee included representatives from 2 key partners, the Fiji Ministry of Agriculture and from the Secretariat of the Pacific Community [SPC] based in Suva, the capital. The Vice Chair of the Committee was Dr Kenneth Cokanasiga, the Adviser on Animal Health and Production within the SPC.

The objectives of the Conference were;

- to stage a high quality scientific and technical program comprising presentations from a range of competent subject-matter specialists, from within as well as beyond the region, around a carefully selected theme of relevance to the livestock and companion animal sectors of the CVA member countries, with special focus on the Pacific Island Countries and Territories [PICTs]
- to impart best-practice current knowledge and to share experiences between veterinarians and para veterinarians, both from within and beyond the region;
- to network widely and develop contacts for future cooperation and collaboration on subjects of priority and need, including through regional organizations such as SPC as well as global entities such as OIE and FAO;
- to update on emerging fields such as aquaculture and organic livestock production as well as on opportunities for use of specific approaches, e.g.in information technology and distant and

continuing education, which might help address the challenges of isolation and fragmentation which so many livestock workers in the region face

### Delegates

A total of 160 participants attended the Conference representing 20 countries, including 10 PICTs, one of which was New Caledonia, making it the largest ever held on livestock in the region to date. Around half of the participants were from outside Fiji, with some from as far afield as the Middle East and Africa. While the majority was from Government/state entities, a significant number were drawn from universities, commercial organizations and civil society. In addition, several leading livestock producers from Fiji attended the Conference.

### Content

The theme of the Conference was "Sustainable Animal Health and Livestock Production - Veterinary Education, Food Security and Animal Welfare in a changing environment." The main program [copy attached at Annex A] was broken down into some 12 sessions, each of which provided coverage of important aspects and areas, such as 'livestock and climate change', 'biosecurity and trade', 'zoonoses', 'food security' and 'animal welfare'. There were a total of 66 presentations under the main Food Animal 'stream' involving 58 different presenters, slightly over half of whom were from the PICTs. Important speakers included the Chief Veterinary Officer of Australia and the Head of the Australian Animal Welfare Strategy. A renowned Australian veterinarian, Dr Hugh Wirth, was also a presenter. In addition, a further 8 presenters were involved in the parallel Companion Animal 'stream' while a similar number participated in the session in this same 'stream' on the pressing common subject of Dog Population Management in the Pacific Islands. Furthermore, a special 2 day Continuing Professional Development [CPD] session was mounted by the Australia New Zealand

College of Veterinary Scientists and was attended by a number of Pacific island participants.



*His Excellency Ratu Epeli Nailatikau, President of the Republic of Fiji with Dr S Abdul Rahman and Dr Robin Yarrow*

Following the Opening Ceremony, the Scientific Program commenced with presentations from 2 keynote speakers, namely Dr Abdul Rahman, President of the CVA and Mr Mike Baker, CEO of the World Society for the Protection of Animals. [WSPA] Dr Rahman highlighted the growing challenges for the profession as a result of increasing urbanization and the need to ensure that veterinary education is meeting the rapidly-changing needs of today's professionals.

He also spoke on the need to better recognize and reward the disproportionate role which women play in raising livestock. Mr Baker spoke on the expanding animal welfare field and the 'five freedoms' of animals which are being significantly driven by consumers - he especially stressed the increasing recognition of 'sentience' [the capacity to feel pain and discomfort] in animals as well as the fact that sound animal welfare is also of economic relevance to farmers.

## Outcome

That the Conference achieved its objectives delivering a very relevant and high standard professional program was the view of the majority of participants, based on the review of the written Evaluation responses and on direct feedback. AusAID funded the participation of 8 PICT participants, including 3 from East Timor, for whom isolation from fellow-professionals is a constant fact of life - the Conference exposed all PICT participants in particular, to much relevant information and sound practice while also extending their individual veterinary networks considerably. PICT participants in general were much more aware of the preferred

responses to key factors limiting livestock production and to the opportunities and scope for both national and regional interventions, working in particular through SPC, of which their respective countries are members. It is clear that all of the PICT participants, in particular the younger ones, benefitted on an individual basis from attending the Conference, based on their individual Evaluation Forms.

A stated priority interest is to remain connected on an electronic CPD initiative which the CVA is in the early stages of developing - this will address the need for continuing education for often-isolated veterinary workers in various parts of the Commonwealth, both on large land masses and in the highly-scattered and fragmented island context!



*L-R: Dr Peter Thornber (sitting), Treasurer CVA, Mr Mike Baker, CEO, WSPA and His Excellency at the Conference*

Other important specific outcomes included;

1. That a scoping study be mounted for a Veterinary Faculty in Fiji to also service the wider needs of the Pacific island region for veterinarians and to undertake related roles including priority laboratory and research activities;
2. That the SPC be added as a member of the OIE Regional Animal Welfare Strategy [RAWS] group and that animal welfare be an integral part of training and practice throughout the region;
3. That increased priority be accorded to 'One Health' activities in terms of enhanced disease surveillance and information-sharing, with the SPC continuing to play a central role in partnership with WHO, FAO and OIE as well as with donors;

4. That resources be allocated to strengthen the scope for Information and Communication Technology [ICT] to play a greater role in driving both surveillance and diagnosis in the region as well as Continuing Professional Development [CPD] in particular cooperating with the program under formulation by the CVA;
5. That a regional veterinary council be established to work through SPC in advancing the practice of veterinary medicine in close association with other relevant entities

The Conference took advantage of the fact that the Annual CREST Fiji Agricultural Show was being concurrently staged in the adjacent city of Lautoka to attend this function. This coincidence was deliberate planned in order to expose participants to a wider dimension of Fiji's commercial livestock sector and was much-valued according to feedback received. Moreover, on the 5th and final day, a field trip was made to a major primary production area 2 hours north of Nadi where Fiji's largest grazing livestock venture was visited. Other activities which were included in this outing were a village-based commercial aquaculture initiative and the adjacent world-famous Fiji Water bottling plant.

An unexpected outcome was the flow-on from 2 separate but linked events which were staged by WSPA - one was a capacity-building workshop in Livestock Emergency Guidelines and Standards [LEGS] which took place immediately prior to the Conference and involved several AusAID-sponsored participants at no direct cost. The second was a WSPA-sponsored 'Pacific strategy' workshop which was held the day after the Conference concluded on 7th September. While the Conference organizers were aware of these 2 events and cooperated fully, these were basically 'piggy-backing' on the main CVA event - in effect it was a 'win-win' situation as PICT participants benefitted.

## Future

The Conference Outcome document will serve as a strategic planning guide to the profession in the region as well as to PIC governments and regional/international organizations, both intergovernmental and civil society, on priority needs. In particular the strong consensus on the need for a veterinary school within the region is a major plus as this will assist to draw the attention of possible partner faculties and potential donors to this important subject. The need for regionally-produced

veterinarians is a compelling one and the proposed scoping exercise will assist greatly in this regard. The Faculties of Veterinary Science at both the Universiti Putra of Malaysia and James Cook University [Australia's only veterinary faculty located in the tropics] which were both represented at the Conference and could potentially each play a role in the proposed regional veterinary school.

In addition, the absolute support shown for the CVA CPD initiative was most encouraging as this could do much to address the constraints and 'tyranny' of isolation, distance and fragmentation which Pacific island veterinary workers have to contend with in advancing their knowledge. Some seeds were sown for partnerships in the future for example with WSPA in terms of the expanding place for good animal welfare practice. The involvement of the Australia NZ College of Veterinary Scientists through their President, Associate Professor Phil Moses, was a real positive because this body is interested in considering how it might be able to play a future role in a professional development sense in the small but expanding companion animal sector within the region.

The next such regional Conference will be in 4 years although the specific venue has yet to be determined - this will provide another opportunity to bring veterinary workers from across this vast region together in order to take stock, to update and to up-skill. Many remarked on the quality of the Conference and how much it had provided them with new insights and encouragement as well as with new contacts. For a good number of such participants, the CVA conferences are in the main, the only ones they attend. Several were attending their first CVA Conference and all were very positive about their individual experiences. The professional collegiality and the relaxed and friendly atmosphere of the Conference were commented on by many.

## General

The Conference was well-structured according to feedback and the balance between professional presentations, questions/discussions and more informal working groups was considered good. The Companion Animal 'stream' was mounted for the first time in a CVA Conference in the Pacific and this drew compliments from the small group of participants who work generally with companion animals. The visit to the Fiji Agricultural Show was commended as was the field trip on the final day, both of which provided an opportunity to gain first

hand appreciation of the challenges and issues of livestock production in the Fiji field situation. In this latter regard, much interest was expressed in the Fiji breed of tropical meat sheep which offers considerable potential as a small ruminant across most if not all of the medium to large PICs. The visit complemented the presentations on the Fiji sheep delivered at the Conference by two experts, one of whom was a well-regarded sheep geneticist and the other being an experienced animal production expert [from Fiji] now working for the Australian Department of Agriculture. Already Samoa and Tonga have imported nucleus flocks from Fiji and are very satisfied with the stock. Many requests have been received by the Fiji Government from other developing countries, some from beyond the region, for similar importations of this most impressive tropical breed which possesses limited wool and which could contribute significantly to enhanced food security in many PICTs.

The Chief Guest at the Opening Ceremony was the President of Fiji - His Excellency's welcome address was commented on in a positive sense by many visiting participants, including by the President of the Australian

Veterinary Association as being most relevant. The very presence of the President of Fiji [who also made time to return one evening later in the week to attend a conference function and engage with participants] and the very substantial support provided to the Conference by the Government of Fiji, through the Ministry of Primary Industries, served to underline the importance it accorded to the event both as a national one and also indirectly for the Pacific island region. In addition, support provided by the SPC in a range of ways, including in terms of expertise, specialist advice, a host of speakers and the use of facilities for preparatory meetings, was absolutely invaluable. Sponsorship was also received from a number of Fiji corporate entities including Goodman Fielder/CREST, Pacific Feeds, Yaqara Pastoral Company, Fiji Water, Pure Fiji, Jacks of Fiji, Mark One Apparel, Western Dairy, Vuda Pigs and Victoria Wines as well as from WSPA, Pacificvet [NZ] and BEC Feed Solutions [Australia].

~ Robin Yarrow, former President CVA and Chairman, Organising Committee

### Vets Urged to be Partners in Sustainable Development

Veterinarians attending the 15th Commonwealth Veterinary Association (CVA) Australasia/Oceania regional conference in Fiji in September 2013 were urged to be 'not just partners in the profession but to be partners in sustainable development as well'.

The call came from Inia Seruiratu, Fiji's Minister for Agriculture, Fisheries and Forests, in a speech to the 150 delegates from 20 countries who gathered in Nadi on Fiji from 2-6 Sep 2013.

In his speech, Mr Seruiratu outlined Fiji's aim to reduce its import bill and achieve economic growth, saying that all measures possible needed to be taken to protect and promote the agricultural sector as better management of this sector could add economic value.

The charity's mobile clinics will visit villages in the four provinces. Training will also be provided to government veterinary extension assistants in equine husbandry and healthcare, improving the services they can provide for animals in their local communities.

'We need to have a food secure Fiji and, most importantly, to have an impact on our economy' he said. We have been relying a lot on tourism and sugar and there is a lot of expectation from the agriculture sector Government pumps a substantial amount towards this industry and we intend to make best use of it for the benefit of the farmers, consumers and the country as a whole.'

He noted that, in the national budget for 2013, the Fijian government had allocated US \$4 million to areas such as the purchase of veterinary drugs, the various livestock sectors, apiculture, upgrading veterinary pathology laboratory facilities and animal waste management for livestock farmers. He said: 'Fiji and her delegates are presented with a unique opportunity to address sustainable animal health production, veterinary education, disease control and food security from our strategic perspectives and to seek answers that can benefit our future with sustainable development. I also urge delegates not to be just partners in the profession but to be partners in sustainable development as well. This is critical as we move towards building a better Fiji.'

~ Veterinary Record, 7 Sep 2013



**HIS EXCELLENCY RATU EPELI NAILATIKAU**  
**CF, LVO, OBE (Mil), OStJ, CSM, MSD**  
**President of the Republic of Fiji**

**ADDRESS AT THE OPENING OF THE INAUGURAL COMMONWEALTH VETERINARY ASSOCIATION (CVA) CONFERENCE IN FIJI**

**Tanoa Hotel, Nadi**

**9:00 am. Monday, 2nd September, 2013**

- *Dr Abdul Rahman, President of the Commonwealth Veterinary Association*
- *Presidents of the Veterinary Associations of both Australia and Malaysia*
- *Representatives of Global Organization including the Food and Agriculture Organization [FAO], the World Organization for Animal Health [OIE], the World Society for the Protection of Animals [WSPA] and the International Fund for Agricultural Development [IFAD]*
- *Distinguished Guests and Participants, which I understand includes some farmers and in particular, those of you from overseas*
- *Ladies and Gentlemen*

*Good morning, ni sa bula vinaka, salaam alaykum, namaste.*

*I bid you all a very warm welcome to the 15th Australasia/Oceania Commonwealth Veterinary Association Conference (CVA), and the first to be staged in Fiji. We are especially honoured and happy to be your host and to be hosting a conference of such significance, given the importance of livestock and other animals to our lives.*

*I understand that the CVA was established in 1967 to promote the veterinary profession by encouraging the highest professional standards within the Commonwealth, of education, ethics and service in order to advance animal health, productivity and welfare and to improve the quality of life of the people. This is achieved by various means, including workshops, study attachments, producing a journal, small projects and conferences.*

*This is a noble mission indeed and does recognize just how important the animal kingdom is to our well-being and increasingly to the ongoing sustainability of our existence on a planet which is facing unprecedented stresses and challenges. At the end of the day we must not forget that we humans are also part of God's family of creatures.*

*The vast Pacific Ocean is the largest geographical feature on our planet. While from a distance our Pacific region seems a pristine and beautiful one - which, of course it is - our highly scattered and mainly small Pacific Island countries and territories [PICTS] have to contend with huge challenges in*



*national development because of their relative isolation, diseconomies of scale, fragmentation, proneness to natural disasters [and increasingly to climate change] and also their limited human resource skills base coupled with the ongoing brain-drain, which includes highly trained veterinarians. I am reliably informed that this last key point is intended as a major focus area during your conference.*

*The consumption and, therefore, imports of livestock products, from dairy products like powdered milk, ice cream, cheese and yoghurts to meat, leather and fibre are increasing steadily right across the region. For example, Fiji imported \$68million worth of dairy products last year while animal and meat product imports reached \$57million.*

*So, the major challenge is to produce more of these requirements locally in-country, while providing economic opportunities, greater self-reliance and enhanced food security in the process.*

*The government is ensuring greater cohesion and effective implementation of the import substitution programme to increase self-reliance and reduce imports.*

*The demand-driven approach both for exports and import substitution commodities including dairy, sheep, beef and pork involves commercialization and strengthening industry organizations and agri-business networks; promotion of young farmer training; recognition of industry priorities by government; and the provision of support to medium-sized entrepreneurs and exporters with existing market protocols.*

Government has been injecting around \$4m - \$5m annually to the livestock sector in terms of improving livestock research & breeding; upgrading of the veterinary pathology laboratory; dairy industry support through the demand driven approach programme; livestock rehab programme; smallholder sheep and apiculture development programme; livestock feed technology and goat and pig development programme.

Government has also allocated \$1m this year for the dairy development programme to assist farmers through subsidizing agro input cost.

Livestock are an integral part of the Pacific Island social and cultural systems and feature prominently in many traditional ceremonies.

Indeed, it is not generally recognized that the concentrations of livestock, in particular of pigs and poultry in some of our very small island countries, are amongst the highest in the world, underlining the point I made earlier about how significant these can be to our existence. They play a major part in the provision of food and in maintaining good nutrition and therefore human health and also often equate with security wealth.

However, growing urbanization and expanding tourism are both adding to the demand for livestock products but are also changing the dynamic of the livestock sector to a more commercial one.

Of course, animals are important to us humans in many other ways not just as food.

Precious endemic biodiversity including animals of all types, shapes and sizes are essential components of our natural ecosystems which are in turn critical to our life here on earth. Without sound functioning ecosystems producing an array of ecosystem services, our future existence will have to be under threat as indeed it already is in several countries.

Even here in the Pacific we have the reality of communities which have had to be re-located due to sea level rise, such as those in the Carteret group of islets in the Solomon Islands.

Animals are valued also because of their companionship and security roles and special niche sectors such as horse racing, zoos and wildlife parks or reserves.

All these provide increasing opportunities and benefits to more and more people. There has been a resurgence of interest here in Fiji in horse-racing. Who knows, we might even have a locally-famous Nadi cup horserace one of these days.

After all, an established racing event used to be located only a kilometre from here at Votualevu, for decades and could well be revived; taking into account the increasing numbers of visitors we receive from two immediate neighbours, Australia and New Zealand.

Another form of wildlife activity of relevance is in the

marine sector. A possible 'marine world' here in Fiji has been under consideration by interested parties over the years and could materialize in the future. This would of course 'fit in' very well with Fiji's island status. The beautiful Mamanuca group of islands in Nadi bay could be one potential location for such a facility.

Referring to the steadily increasing demand for livestock products, this is now providing greater opportunities to producers and in some situations, regional export markets are also developing. This is already the case here in Fiji with so many smaller island neighbours relatively close by.

I stress the word relatively because as you are all aware distances in the Pacific can be extreme. A good example of this fact is the Republic of Kiribati to our north. If this archipelago were to be super-imposed on the mainland United States of America in a map sense, the islands would stretch right across the US Mainland from the west coast to well into the Atlantic Ocean!

Yet the sector does not generally receive great priority in terms of policy and financial resource allocation and for this reason some of the gains made elsewhere in livestock production technology, for example in nutrition, genetics and breeding and also in disease control, have not been possible to fully access.

Fiji has recorded considerable progress in several livestock areas such as in the development of a tropical non-wool breed of sheep which is a very good meat animal and has been acquired by both Samoa and Tonga where it is performing very well.

I understand that you will see these interesting animals when you all visit the north of this island on Friday.

On the one hand, our rapidly-expanding poultry sector with production at its highest last year - 18,285 tonnes - is a credit to the many players and is already taking advantage of the significant export market. On the other hand, we need to do more in the dairy sector as our self-sufficiency level is quite low at 47%.

There is much room for improvement and expansion. Markets do exist, which is always a key element in any agri-business undertaking.

There is still a need for improved information on the sector - on numbers, trends, constraints, research requirements and infrastructural needs. Skills also need to be enhanced, not only at the farmer level but also at the professional level.

The initiative by the Fiji National University to commence a Diploma in Animal Health Program a few years ago was a very commendable move in this direction. There is an overall shortage of veterinarians in Fiji, as well as in all other PICTS except in the French territories. This important issue is on the conference agenda.

Many feel that home-grown veterinarians are now needed for our region and Fiji is perhaps the best-placed country to

consider this option. After all, Fiji has been producing very competent medical doctors and dentists for the region since 1889 through the Fiji school of medicine! Locally-trained veterinarians will be more in tune with the prevalent conditions and circumstances, some of which are unique to this region.

Producing our own veterinarians will also be a better way of using the resources required - and which are available locally - for this purpose, as opposed to sourcing them from often expensive overseas institutions. New approaches such as partnerships with overseas veterinary schools are now increasingly "the way to go", thereby building on their experience and knowledge.

The faculty of veterinary science of the University Putra in Malaysia is participating in this conference and is an example of such an institution in another developing tropical country.

The manner in which we raise and generally treat animals - now commonly referred to as 'animal welfare' - is important from several perspectives.

Animals feel pain, anxiety and discomfort in much the same way that we do and it is proper for us to both recognize and also respect this in a more meaningful way. In addition, it is now the norm in many developed countries that vocal consumers are actually insisting that animal products which they consume are derived from farm systems which practice good animal welfare.

The World Society for the Protection of Animals [WSPA] is also participating actively in this conference as a valued partner and we are pleased to welcome this global organization to Fiji.

Our near neighbour New Zealand is a clear world leader in rugby and introduced this great game about which we are so passionate, to Fiji in the early 1900s.

We all know that in addition to this sport - which suits the Pacific islands more than any other, New Zealand is also a major global player in livestock production and in exports. Aotearoa is now looked on as a trend setter in animal welfare standards and global best practice and it is appropriate that we have several of their highly qualified speakers participating in the conference.

Sustainable development is now recognized as the key to life on earth in the long term future. Appropriately, this was a major focus of the inaugural Pacific Islands Development Forum (PIDF) that was recently held in Nadi, in which Fiji played a lead role in organizing and hosting. In fact there is increasing emphasis on 'green development' and green growth as well as on green economies and this conference, adopted its theme of 'sustainable animal health and production' over a year ago when the organizing committee commenced its work! Of course, livestock development is very often based on green principles and conducted in a green setting where pasture and other natural feeds are absolutely fundamental. This conference is, therefore, in a good position to build on the principles of green growth and increasing sustainability that

the recent PIDF so strongly endorsed.

Ensuring that our communities are food-secure is a major challenge and includes ensuring that our people consume nutritious, healthy and safe food in our battle against Non Communicable Diseases (NCDS) as well as for the general health and well-being of our population and also of our increasing numbers of visitors.

The Pacific Island region is of course very vulnerable to climate change.

I have mentioned an example of a low-lying neighbor already experiencing the effects of rising sea levels. Extreme weather conditions are being experienced more regularly, and the need to both mitigate and adapt to this is vital for our communities. The need to identify and conserve our unique biodiversity is also important in this process.

Our region is relatively free from many infectious diseases of both humans and animals. While we are fortunate to have such a situation we should vigilantly preserve it. More effective disease surveillance systems need to be in place for us to be able to detect and respond to any new disease incursions brought about by changing environmental conditions and also by the enhanced movement of people and goods.

Biosecurity is, therefore, a critical aspect for all small Pacific Island countries and territories as introductions of invasive species such as the green iguana to Fiji can wreak havoc on precious endemic species and fragile ecosystems. It is important that other PICTS learn from Fiji's sad experience. The old adage that a chain is only as strong as its weakest link is very true in the context of regional biosecurity.

It is so necessary and vital for all PICTS to collaborate closely on shared needs such as protecting the region as a whole from undesirable pests and diseases which are not currently present, as an accidental introduction of a pest or invasive species in one country, as in Fiji's case, will automatically expose the other states in the region to increased risk.

Partnerships between like-minded organizations are increasingly recognized as desirable practice because of the synergies, complementarities and added-value that can be capitalized on in this mode. This conference demonstrates this in several ways, including the fact that working together and cooperating crosses all frontiers and also across what we have often considered up to now as divisions.

Partnership brings out the best in people and organizations, and, therefore, should as far as possible, involve all kinds of entities, namely civil society, commercial and government. This conference is a good example of this valuable tri-partite collaboration which can benefit all stakeholders. The James Cook University located in Townsville, Queensland is a very important institution as it hosts Australia's only veterinary faculty located in the tropics.

It is, therefore, most pleasing to see their representatives

here at our meeting, in addition to those from University Putra in Kuala Lumpur! Other important partners include the World Organization for Animal Health [OIE] and the Food and Agriculture Organization [FAO] and the International Fund for Agricultural Development [IFAD]. We are indeed delighted to have you all here at this conference.

Animal health and production workers are often isolated, particularly in this vast region of highly dispersed and scattered small island countries. This conference has brought together livestock specialists from across our region including from the Pacific territories of France, to meet and network both with their colleagues and also with colleagues from as far away as Africa.

The tyranny of distance and isolation is now no longer the huge challenge and constraint that it had been for us in the Pacific as a result of modern digital technology. Distant education is a subject which fits well into this context, where mobile phones can all of a sudden transform how we 'connect' with subject-matter specialists from anywhere on our planet, almost as if they were in the next room.

Images can be sent anywhere in seconds and advice and knowledge can be received to assist with all kinds of situations which in the past could take weeks even to refer to head office!

Conferences can be wonderful gatherings in a professional sense, but are much more meaningful, if concrete and coherent conclusions with suggestions and recommendations are produced for follow-up.

I have been informed that this is very much the spirit which our conference organizers intend to adopt so that there will be an authoritative set of relevant outputs which have strong 'ownership' and which in turn will have considerable potential to contribute to concrete desired outcomes at both the national and regional level.

Our vital regional natural resources development organization, the Secretariat of the Pacific Community [SPC] which was formed immediately after WW2, is the conference's key technical partner. The SPC has played such an important role in helping to shape this event's program and in providing so much valuable support and advice, a fact which is much appreciated by the Fiji government.

Of course, the Fiji government is the major sponsor of the conference and this is entirely fitting and appropriate as both livestock and animals more generally do matter greatly to us and will have an increasingly important role in the future as our population continues to increase and consumption of livestock products per head continues to rise.

All conferences should endeavor to 'break out' of the venue in order to experience more of the host country rather than just the immediate urban location, and in the process, to experience a little of what makes a country 'tick' including in this case, the agricultural and livestock sector. It is very pleasing to know that a visit will be made to the Crest

FijiAgriculture show at Churchill Park in Lautoka.

In fact, as a result of good strategic planning and collaboration on the part of key stakeholders in the show, in particular the principal commercial partner, Crest, this has been deliberately timed to coincide with the conference.

In addition, a post-conference trip will be made to northern Viti Levu where you will be visiting a number of relevant and interesting activities.

This includes the renowned Fiji water bottling plant and the Yaqara Pastoral Company, the largest grazing livestock enterprise on this island. Specific activities which will be looked at include tropical sheep production using the very impressive Fiji Fantastic breed which had been developed here over the last 30 years, based on the cross breed of the Barbados Black Belly breed from the United States of America and the Wiltshire Breed from Australia.

Also scheduled is a visit to the reforestation with indigenous tree species on degraded hillsides where grazing livestock are also a land-use activity. Another production method which will be visited will be the culture of fish species at the village of Vitawa - this expanding technology of aquaculture is another field where veterinarians and para veterinarians have an important role to play.

A good number of commercial entities in Fiji's livestock sector have contributed valuable support to this conference, the largest of its kind to be held in Fiji. I know our organizers are most grateful for this show of solidarity by these key stakeholders and I wish to also recognize these important players in our national livestock development effort.

In closing, we must accept the different circumstances, challenges and opportunities that a large region, like ours face. Given the limited resources available to our various governments and administrations, are the priority issues that need to be addressed and the preferred frameworks and partnerships to ensure maximum buy-in and ownership of this process.

Such questions as: what strategic partnerships need to be established to deliver solutions to these challenges? Is there need for greater investment into research and development? Is there a need for greater investment into education, including veterinary education? How do we place more attention on the vital sustainable management of our natural resources?

These are some of the questions that we need to be asking ourselves as technical experts, scientists and professionals.

The onus is, therefore, on us all to engage seriously and to reach clear consensus on these, and other key questions and challenges, and to then deliver, at the end of the exciting week that lies ahead.

Distinguished guests, ladies and gentlemen, I wish you all a very fruitful and enjoyable conference as well as a most meaningful Fiji experience.

Thank you, vinaka vakalevu, sukria and  
*babaot dhanayavad*



# Canada Caribbean

## 65th CVMA Convention, Victoria, July 10-13, 2013

Victoria welcomed almost 900 delegates to the 65th Annual Canadian Veterinary Medical Association Convention.

With a host of business and corporate meetings, 2 labs, a day-long summit focusing on animal welfare, 2 business management sessions, an emerging leaders program, 3 pet nutritional assessments, exciting exhibits, and 36 concurrent sessions, the convention schedule was jam-packed offering many options for attendees.

As Canada's only national multi-species event, this annual CVMA Convention offered a 4-day program. The first day featured the Summit of Canadian Veterinary Leaders, wet and dry labs, Business Management Program and the Emerging Leaders Program. A total of 35 speakers shared their expertise and experience. This was followed by 3 days of small animal topics with 3 concurrent streams; 3 days of equine and bovine topics and one day of animal welfare sessions, as well as integrative medicine.

The CVMA Convention is the first veterinary convention in Canada to launch a mobile convention application (app). Delegates could find session descriptions, speaker biographies and photos, attendee profiles, and interactive personalized agenda and real-time polls and surveys on this app; 499 participants downloaded this app and more than 23,500 page views were registered.



*Some participants of the 2013 Emerging Leaders Program*

### CVMA 2013 Summit of Canadian Veterinary Leaders

This year's Summit, chaired by Dr. Jim Berry, attracted 8 outstanding speakers and 6 international guests to speak on the topic of "The Two-Edged Sword: Animal Welfare in Veterinary Practice." The Summit included pertinent and thought-provoking presentations and engaging discussions. Speakers included Dr. Terry Whiting (*Loving and killing animals in veterinary medicine*); Dr. Carol Morgan (*Moral decision-making, ethics and welfare*); Dr. Sheilah Robertson (*Wicked cats or a wicked problem?*); Dr. Duane Landals (*Large animal decision-making: Role of government and regulatory bodies*); Dr. David Fraser (*Animal welfare, public trust, and professional animal production*); Dr. Caroline de Jaham (*Why and what veterinarians should know about animal welfare laws and their mechanisms*);

### Where veterinarians meet...

The primary function of the CVMA Convention is to provide a venue where, once a year, veterinarians from coast to coast can meet, share knowledge and participate in continuing education. As well, the Convention provides a venue for numerous formal and informal meetings. Prior to the Convention, the CVMA hosted the annual meeting of the International Veterinary Officers' Coalition (IVOC), comprising veterinary medical association presidents and chief executive officers (CEOs) of Canada, Australia, Britain, New Zealand, South Africa and the United States.

Additional formal meetings held during the Convention included CVMA Executive and Council meetings, the CVMA Annual General Meeting and Awards luncheon and meeting with CVOs.

### AGM and Awards Luncheon

The CVMA's 65th Annual General Meeting and Awards Luncheon took place on Wednesday, July 10. The CVMA's new president is Dr. Jim Berry, co-owner of Douglas

Animal Hospital, a full service hospital for family pets in Fredericton, New Brunswick. The 2013-2014 Executive includes: Dr. Jim Berry, president; Dr. Jean Gauvin, president-elect; Dr. Nicole Gallant, vice-president; Dr. Troy Bourque, executive member; Dr. Jim Fairles, immediate past-president; Dr. Barry Stemshorn, treasurer; and Mr. Jost am Rhyn, executive director.



**Back Row L-R:** Drs Jim Berry, President-Elect CVMA; Dr Gavin Sinclair, President, NZVA; Dr Douglas Aspros, President, AVMA; Dr Ron De Haven, Executive Vice President, AVMA; and Mr. Graham Catt, CEO, AVA  
**Front Row L-R:** Dr. Ben Gardiner, President, AVA; Prof. Bannie Penzhorn, MD, SAVA; Dr. Iaan du Preez, President, SAVA; Mr. Carl Padgett, Past President, BVA; Dr. Jim Fairles, President, CVMA; and Mr. Jost am Rhyn, Executive Director, CVMA

The CVMA and its members honored the following award recipients:

**Small Animal Practitioner Award:**  
Dr. Cheryl Cullen

**Merck Veterinary Award:** Dr. John Kastelic

**Humane Award:** Dr. Judith Samson-French

**Practice of the Year Award:** Calgary Trail Pet Hospital

**RVL Walker Award:** Ms. Emily Vellekoop

**President's Award:** Dr. Terry Whiting

**CAAHTT Award:** Ms. Dawn Brodie

**VWB Award:** Dr. Adam Little and Ms. Robin Payton

~ CVJ, Vol 54, Oct 2013

### Fredericton Veterinarian Appointed President of the Canadian Veterinary Medical Association



*Dr. Jim Berry*

Dr. Jim Berry has been appointed the 65th national president of the Canadian Veterinary Medical Association (CVMA). Dr. Berry holds a Bachelor and Masters in Biology and a Doctor of Veterinary Medicine from the Ontario Veterinary College. Co-owner of Douglas Animal Hospital, a full service

hospital for family pets in Fredericton, New Brunswick; Dr. Berry has a special interest in rehabilitation, pain control, and orthopedics.

In addition to being CVMA president, Dr. Berry is Canada's representative with the World Small Animal Veterinary Association and a past-president of the New Brunswick Veterinary Medical Association.

~ CVJ, Vol 54, Sep 2013

### Veterinarian Receives 2013 Apex Award of Excellence

Dr. Brian Evans, former Chief Veterinary Officer/Chief Food Safety Officer, Canadian Food Inspection Agency won the Pierre de Blois Award, which is given as part of the APEX 2013 Awards of Excellence.



*Dr. Brian Evans*

Dr. Evans has served Canadians with distinction for over 31 years as a public servant, first with Agriculture and Agri-Food Canada and subsequently with the Canadian Food Inspection Agency (CFIA). He has served as Canada's Chief Veterinary Officer for the last 15 years, and in that role has guided the CFIA through several significant animal disease crises: Bovine Spongiform Encephalopathy (BSE) in 2003; Avian Influenza in 2004, 2007 and 2009; and the H1N1 swine flu pandemic. Dr. Evans was the face of the Agency during these highly visible events, and his ability to translate scientific information into plain language for Canadians served to maintain confidence in the overall system. Dr. Evans also served as Canada's first ever Chief Food Safety Officer.

~ CVJ, Vol 54, Aug 2013



## Veterinary Council Established in Rwanda

The Rwandan National Assembly with the initiation of Dr John Musemakweli, CVA Councillor for Rwanda, who was the Member of Parliament in August 2013 passed a bill establishing Rwanda Veterinary Council. On 16th January 2014, the Honourable Minister of



*Dr John Musemakweli*

Agriculture and Animal Resources, Dr Agness Karibata called a meeting to launch the Council according to the law establishing it. It was during this, first meeting that the general assembly of Rwanda Veterinary Association elected into office the first leaders of the council for the first three years as follows Dr Rusanganwa Francoise Xavier, Chairperson; Dr Kanyandekwe Christine, Vice Chairperson; Dr Kamanzi Uwilingiye Elisee, Secretary and Dr Nyirimana Carine, the Treasurer.

It was an exciting moment in the History of Rwandan Veterinary Profession. More interesting was the presence of a crop of young veterinary surgeons below the age of 35 (about 70% of over 200 professional vets in the country) who attended the ceremony.

## Improving the Welfare of Working Donkeys in Zimbabwe

A New programme of veterinary services is being launched by the Society for the Protection of Animals Abroad (SPANA) to improve the health and welfare of working donkeys in Zimbabwe.

Figures from the Food and Agriculture Organization suggest that there are at least 175,000 working donkeys in the provinces of Masvingo, Midlands, Mashonalad West and Manicaland in Zimbabwe. SPANA reports that they are increasingly being relied on for agriculture, trade and transport in rural areas.

The charity's mobile clinics will visit villages in the four provinces. Training will also be provided to government veterinary extension assistants in equine husbandry and healthcare, improving the services they can provide for animals in their local communities.

Andy Stringer SPANA's director of veterinary programmes, said: 'Currently communities have limited access to veterinary treatment for their animals, but through providing vet services, training animal health professionals and using community development initiatives we hope to make this a thing of the past. We're aiming for a future where we have developed the capacity of local services providers to deliver animal healthcare, as well as starting to change the attitudes and behaviours of animal owners through education?'

The veterinary services will be provided in association with the AWARE Trust, a Zimbabwean charity that has been funded by SPANA for the past three years through its small grants programme.

~ Veterinary Record, Sep 7, 2013

## Case of Rabies in Netherlands

The confirmation of rabies in two puppies imported into the Netherlands from Bulgaria should be a wake-up call to the UK authorities to ensure that the enforcement of pet movements into the UK remains a priority, So said Robin Hargreaves, the BVA President, after news broke last week that the two four-month-old puppies, which had been imported to the Netherlands on 5 Oct 2013, had both been confirmed as positive for rabies virus following laboratory testing.

The World Organisation for Animal Health (OIE) reported on 21 Oct 2013 that the first signs of rabies had occurred in one of the puppies on 10 Oct 2013, presenting as a fever and paralysis. The puppy was euthanased on 18 Oct 2013. The second puppy the sister of the first was euthanased because it originated from the same litter. It showed signs of haemorrhagic gastroenteritis, but no neurological signs. The OIE added that people who had been in contact with the dogs over the previous two weeks would be investigated and treated if necessary.

~ Veterinary Record, Nov 2, 2013

### Triple launch Event helps Celebrate Veterinary Record's 125 years

Veterinary Record's 125th anniversary was marked by a triple launch event at the EVA's headquarters in London last week. The event saw the launch of a new book tracing the history of the BVA by Edward Boden, a former Veterinary Record editor, along with the launch of two new EVA journals, Veterinary Record Case Reports and Veterinary Record Open. The two new journals join Veterinary Record and In Practice and will be published online.



*Edward Boden (left) and Peter Harlech Jones, the BVA President, at the launch of Mr Boden's book, 'Punching Above Their Weight', at the BVA's headquarters on July 31. The event also marked the launch of two new BVA journals, Veterinary Record Case Reports and Veterinary Record Open, which, like Veterinary Record, are published by BMJ*

Mr. Boden was editor of Veterinary Record from 1973 to 1990. His book, 'Punching Above Their Weight', documents the foundation of the BVA (originally the National Veterinary Association) in 1882 and the struggle of veterinarians to raise their practice from 'disorganised pragmatic beginnings to a science-based, politically influential body'. It forms part of a series 'New Perspectives on Veterinary History', published by Winchester University Press.

~ Veterinary Record, Aug 10, 2013

### BVA appoints a new Chief Executive

The BVA has appointed David Calpin its new Chief Executive.



*Mr. David Calpin*

Mr Calpin took up his post on 4 November 2013, joining the BVA from Defra, where he was a Deputy Director. During his time at Defra, his policy responsibilities included climate change, GM crops, sustainable land management and, most recently, bovine TB. For a time last year, he was acting director animal health and welfare.

Mr. Calpin had been in the senior civil service since 2005 and has substantial experience of both staff and financial management. He also spent two years working in Brussels representing the UK Government in EU negotiations, and has lived and worked in France, South Africa and Brazil. Before joining the civil service, he worked for Barclays Bank.

~ Veterinary Record, Nov 9, 2013

### New Officer Team at the BVA

Mr. Robin Hargreaves became President of the BVA at its AGM on 26 September 2013. Mr. John Blackwell was endorsed as President-elect and Mr. Peter Harlech Jones will serve as past-president for 2013/14.



*Past President Peter Jones, President Robin Hargreaves, President Elect John Blackwell*

Mr Hargreaves, a small animal practitioner, is a director of Stanley House Vets in Come, Lancashire.

~ Veterinary Record, Oct 5, 2013

## BVA highlights work of British Vets in fight against Rabies

British veterinary surgeons are making a considerable contribution towards alleviating the burden of rabies across the globe, according to the British Veterinary Association (BVA). The BVA is marking the seventh World Rabies Day on 28 September by highlighting some of this important work.

World Rabies Day is an annual event led by the Global Alliance for Rabies Control to provide a unique platform for individuals and organisations to raise awareness and understanding about the importance of rabies prevention. This year's theme 'Rabies: understand it to defeat it' celebrates the educators and communicators whose work is essential in helping more people protect themselves against the disease.

Commenting, BVA President Robin Hargreaves said: "The BVA is extremely proud to support World Rabies Day. This campaign offers a tremendous opportunity to increase global awareness of this devastating, yet totally preventable, disease.

"Despite becoming a forgotten disease in western Europe many UK vets are playing a part in helping to eliminate canine rabies. As well as those working overseas who tackle the disease on a daily basis, there are vets and virologists based in the UK who are making a considerable contribution towards alleviating the burden of rabies."

The BVA is proud to highlight the work of British vets in the fight against rabies:



*Dogs are a reservoir for rabies in many parts of the world (credit: AHVLA)*

### AHVLA

As a World Health Organization (WHO) collaborating centre for rabies and an OIE Reference Laboratory, the work of the UK's Animal Health and Veterinary Laboratories Agency (AHVLA) includes controlling or understanding rabies worldwide. They undertake confirmatory diagnosis and virus characterisation for other countries on behalf of the OIE as well as having their own research projects, and collaborating with others.

Vets and researchers at the UK's AHVLA are involved in this ongoing global fight against rabies through their scientific and technical expertise. Their recent project in Azerbaijan, which is funded by the UK's Global Partnership Programme, training scientists in rabies diagnosis and spearheading a public awareness campaign, highlights the importance and effectiveness of international cooperation. AHVLA has been awarded funding for a similar project in Georgia to develop some regional integration.

### Afya Serengeti

Professor Sarah Cleaveland from the University of Glasgow, a founding director of the Alliance for Rabies Control, which spearheaded the concept and establishment of an annual World Rabies Day, leads the Afya Serengeti Project - a rabies elimination project which is supported by MSD Animal Health.

The research of Professor Cleaveland and her team has shown that domestic dogs are the main reservoir for rabies in the Serengeti and account for over 84 per cent of human rabies exposure. Around 50,000 dogs are vaccinated every year as part of the programme which is resulting in a reduction in the number of cases of human and canine rabies, and canine rabies has now been eliminated in some parts of the Serengeti ecosystem.

### Help in Suffering, Jaipur

Help in Suffering (an animal welfare charity in Jaipur, India) has been involved in street dog and rabies control since 1994, and has documented the effects of the work.

Jack Reece, a British vet who has worked at Help in Suffering since 1998, explained: "As a result of the



*Laboratory training in Azerbaijan (credit: AHVLA)*

sterilisation and vaccination against rabies of street dogs we believe we have reduced the number of human rabies cases in the city perhaps to zero. We have reduced the street dog population by 48%, and we believe we have caused a reduction in human dog bite injuries from over 7 per 1,000 population to 2.7 per 1,000 population. Through data collection we have also worked out both longevity and fecundity estimates for street dogs in Jaipur, and reported both seasonality in street dog breeding and an association between breeding season and human dog bite cases.”

### **Mission Rabies**

Mission Rabies, led by British vet Luke Gamble, launched this month with a 30-day mass vaccination campaign in India. The purpose of this is twofold: to achieve a target of vaccinating 50,000 dogs in 30 days

across ten selected rabies hotspot areas, and secondly, to attract huge public support (both in India and internationally), promote community awareness and to generate sponsorship for the India National Rabies Network.

### **Veterinary students**

Veterinary students from the UK are also playing their part in rabies research. Abi Waddington (a BVA overseas travel grant recipient) and Nikki Pasturel from Nottingham Veterinary School are currently in Goa undertaking a project which includes a component on rabies in the local dog population, providing critical information in ongoing research and planning into control and eradication of rabies

~ Helena Cotton, BVA Media

## **Pig Vet recognised for services to the industry**

Veterinary surgeon Mr. Pete Bown has been named as this year's winner of the David Black award in recognition of his 'significant and lasting contribution to the British pig industry'.



*Mr. Pete Bown (left) receiving the David Black Award from Mr. George Eustic, Minister for Farming at Defra*

The award is described as 'the most prestigious the pig industry has to give' and is presented annually to recognise an individual from any background who has made a significant and sustained contribution.

Mr. Bown has been in practice at the George Veterinary Group in Malmesbury, Wiltshire, since 1968 and has seen the practice grow from four vets to more than 30 vets, with six pig specialists. He has also worked with Defra, notably providing advice during the foot-and-mouth disease outbreaks and helping to rewrite the Government's control policy for notifiable diseases in pigs. In 2010, he was the author of the industry's 10-year pig health and welfare strategy.

~ Veterinary Record, Nov 16, 2013

## **BVA Congress at the London Vet Show**

For the first time, the BVA Congress was held at the London Vet Show (LVS). Taking place at Olympia on November 21 and 22, 2013 the show was expected to attract 4500 people and combined an extensive commercial exhibition with a comprehensive CPD programme.



*Mr. Robin Hargreaves*

Opening the show, the BVA President, Mr. Robin Hargreaves, said that bringing the BVA Congress to LVS provided a great opportunity for the Association to meet a wider audience, to listen to its members and to explain some of the things that it was doing on their behalf.

In addition to the traditional contentious issues debates that have been the mainstay of past BVA congresses, the BVAs CPD Group contributed equine and farm animal CPD streams to sit alongside the companion animal CPD programme developed by the Royal Veterinary College. The BVA also held a Careers Fair exclusively for BVA members, which provided a stream of lectures considering issues such as how to get the right job, time management and alternative career options, together with one-to-one careers advice sessions.

~ Veterinary Record, Nov 30, 2013

# CALENDAR OF EVENTS

## 2014

18th CVA Asian Regional Meeting and Conference, Bangalore, India. **20-24 February**

BSAVA World Congress, The ICC/NIA, Birmingham, UK. **3-6 April**

Aviana Zambia International Expo for Poultry and Livestock, Lusaka, Zambia. **4-5 April**

48th Kenya Veterinary Association AGM & Scientific Conference, Eldoret, Kenya. **23-26 April**

38th Annual World Small Animal Veterinary Association (WSAVA) Congress, Cape Town, South Africa.  
**16-19 September**

IDF World Dairy Summit, Tel Aviv, Israel. **27-31 October**

Aviana Uganda International Expo for Poultry and Livestock, Kampala, Uganda. **30-31 October**

28th Biennial Caribbean Veterinary Medical Association (CbVMA) Conference, Grand Cayman, Cayman Islands. **4-7 November**

**8th Federation of Asian Veterinary Associations (FAVA) Congress, Singapore. 28-30 November 2014**

## 2015

6th Pan Commonwealth Veterinary Conference, Kuala Lumpur, Malaysia. **24-27 March**

32nd World Veterinary Congress, Istanbul, Turkey. **13-16 September**

## 2016

Fourth OIE Global Conference on Animal Welfare, Chile. (Date and Venue to be announced)

## 2017

2017 World Veterinary Congress, Incheon, Korea. **August** (Dates to be announced)

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