

# Blood transfusions

TRANSFUSION of whole blood or blood products is life saving in certain situations. Thought must be given to each case to assess whether a blood transfusion is indicated and, if so, whether fresh or stored whole blood, packed cells or plasma is required. The suitability of the donor animal and method of collection and storage of blood and components should be supervised to ensure that life-threatening complications of transfusions are minimised.

## Indications for whole blood therapy and component therapy

### Haemorrhagic shock

Blood loss resulting in hypovolaemia may be an indication for whole blood therapy. The immediate requirement in a hypovolaemic animal is volume replacement rather than an increase in oxygen-carrying capacity. This can be achieved with isotonic crystalloid solutions (for example, Hartmann's solution) or plasma volume expanders (such as gelatin solutions). Up to 90 ml/kg of a crystalloid results in improved peripheral perfusion, increased arterial blood pressure and urine output.

Packed cell volume (PCV) and plasma protein levels following acute blood loss will be normal. Once the circulating volume has been replaced, the PCV and plasma protein concentration will fall, with the following possible consequences:

- If the PCV stabilises above 0.20 litre/litre and improvements in peripheral perfusion, arterial blood pressure and urine output are maintained, whole blood therapy will not be necessary, particularly if the site of blood loss has already been identified and managed;
- If the peripheral circulation deteriorates and the PCV falls below 0.20 litre/litre, whole blood transfusion (10 to 20 ml/kg), together with surgical intervention to identify the source of blood loss and avert the continued haemorrhage, is indicated.

Stored whole blood is adequate for patients with blood loss resulting from trauma or bleeding neoplasms, but fresh whole blood should be used where coagulation defects are suspected.

### Non-regenerative non-haemolytic anaemias

Non-regenerative anaemias are usually chronic conditions, but may present acutely once a PCV of approximately less than 0.15 litre/litre (dog) and less than 0.12 litre/litre (cat) is reached. Blood transfusion is not curative but supports the patient until a diagnosis is reached. If repeated transfusions are envisaged, cross-matching should be performed since the risk of transfusion reactions increases with repeated blood transfusion. It is important to recognise that these animals are normovolaemic and that whole blood should be administered very slowly (<20 ml/kg over 24 hours) to prevent circulatory overload; packed red cells are the component therapy of choice in these cases.

### Coagulopathies/thrombocytopenia

Defects in blood coagulation and platelets may present as acute bleeding crises. Therapy should be directed at treating the underlying cause of the problem. The following should also be borne in mind:

- Immediate blood transfusion may be essential to compensate for and halt (if fresh blood is used) the haemorrhage – diagnostic samples should be obtained before a transfusion is given;
- Fresh whole blood transfused within 12 hours of collection will provide functional platelets and coagulation factors;
- Fresh frozen plasma is a useful source of coagulation factors and a more concentrated form of these can be obtained in a cryoprecipitate of plasma;
- Frozen plasma cannot be used as a source of platelets;



Anaemic dog receiving blood. Anaemia is the major indication for blood transfusion in veterinary practice

- Large volumes of whole blood are required to elevate the platelet count. In cases of life-threatening thrombocytopenia, platelet-rich plasma would represent the ideal form of therapy, but is unlikely to be available. Vincristine (0.5 mg/m<sup>2</sup>) can increase the peripheral platelet count in the short term;
- Desmopressin (DDAVP; Ferring) increases plasma levels of factor VIII and von Willebrand's factor and may be administered to the donor to increase levels in the collected blood as well as to the recipient.

### Haemolytic anaemias

In cases of immune-mediated haemolytic anaemia, transfusion

This article, one of a series published in the *BSAVA News*, has been prepared by the BSAVA's Scientific Committee

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### Editor: Frances Barr

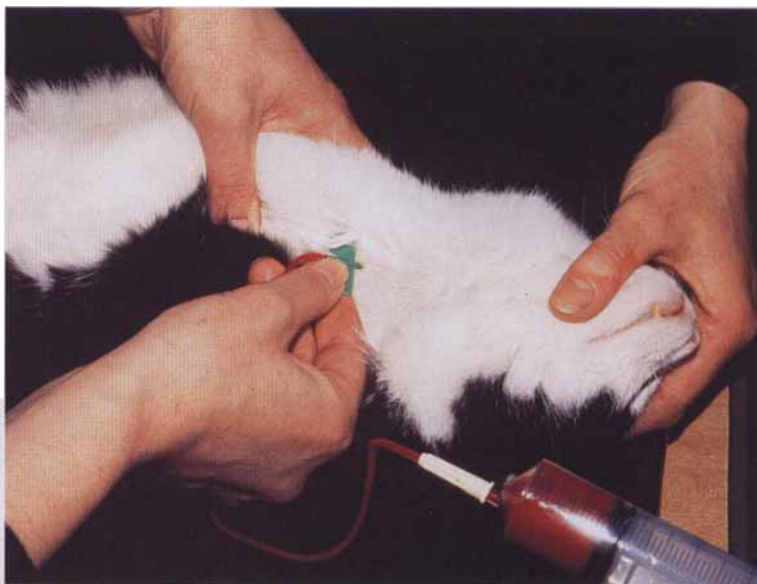
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theoretically initiates or accelerates a haemolytic crisis, enhances antibody production and may delay erythropoiesis. However, the clinical significance of these effects is unclear. Blood transfusion must be used where loss of oxygen-carrying capacity is life threatening. Cross-matching should be performed if possible. As the patient's serum is incompatible with its own red cells, it is likely to be incompatible with most donors' cells. Nevertheless, there is merit in choosing blood cells from donors with which the patient's serum reacts least. Blood should be given as packed cells to avoid circulatory overload, and the minimum volume of cells possible should be transfused.

In cases of non-immune mediated haemolytic anaemia, the underlying cause should be identified and treated. Blood transfusions are indicated if the oxygen-carrying capacity of the blood falls to life-threatening levels. Packed red cells would be the treatment of choice to avoid circulatory overload.

#### Hypoproteinaemia

Blood plasma may be indicated in the supportive therapy of an animal with hypoproteinaemia. Should the plasma albumin concentration fall



Picture: C. M. Knottenbelt

**in dorsal or lateral recumbency and blood collected from a jugular vein. Blood is slowly collected into a 50 ml syringe containing anticoagulant and gently mixed**

below 15 g/litre, transfusion of fresh frozen plasma would be indicated to prevent oedema formation. If whole blood therapy is used in these circumstances the risk of circulatory volume overload should be recognised.

#### Collection and storage of blood and blood products

##### Selection of blood donors

The need for blood and blood products is most common in emer-

gency cases. If these are to be dealt with in the practice, a list of suitable in-house blood donors must be available and a store of blood/fresh frozen plasma should be maintained. Provided that collections are performed on a scale consistent with a practice's reasonable needs in the course of its clinical work, then these could legitimately be performed under the Veterinary Surgeons Act 1966 and outside the requirements of the Animals (Scientific Procedures) Act 1986.

Use of donor animals from outside the practice, which are not under the veterinarian's care, is less practical for a number of reasons:

- Harvesting of blood would normally have to be carried out by the donor animal's own veterinary practice, thereby introducing a time delay;
- There may be an increased risk of contamination and poor handling of the blood;
- The suitability of an animal from outside the practice needs to be assessed as a blood donor presents problems;
- The donor animal's previous medical history, vaccination status, status with respect to blood-borne diseases and frequency of blood donation may be unknown.

Time spent obtaining the above information adds further delay to the transfusion; time which is not

### Factors to consider when choosing a blood donor

#### Dogs

- Blood donors should be more than 25 kg bodyweight;
- The donor animal should be in good physical condition;
- The blood donor should be less than eight years of age;
- Donors should be up to date with all routine vaccinations;
- The PCV of donors should be greater than 0.40 litre/litre.

Greyhounds are ideal donor dogs because of their lean build, docile nature and low frequency of DEA 1.1, DEA 1.2 and DEA 7 antigens; these are responsible for the most severe immunological transfusion reactions in sensitised dogs. Although reactions to a first transfusion are infrequent in dogs, cross-matching of donor and recipient blood is good clinical practice. Cross-matching before second and subsequent transfusions is essential. Commercial testing kits are only available to identify donors negative for DEA 1.1.

#### Cats

- Blood donors should be mature animals of about 5 kg bodyweight;
- The donor animal should be serologically negative for feline leukaemia virus, feline immunodeficiency virus and feline coronavirus, and have no evidence of *Haemobartonella felis* infection;
- The donor cat should ideally be seronegative for *Toxoplasma gondii*;
- The PCV of the donor should be in the top half of the reference range for the laboratory.

In cats, three blood types are recognised: A, B and AB. The relative proportion of each type varies between pedigree and non-pedigree cats and from region to region. Compared with dogs, the risks of transfusion reactions, even on the first occasion, are higher. Therefore, blood typing or major and minor cross-matching is strongly recommended before any transfusion. Desktop feline blood typing kits are available for use in practice laboratories.

available when blood is required in an emergency.

Before any animal is used as a blood donor for the first time:

- A full routine haematological assessment must be performed;
- In older animals, additional serum biochemical analyses should be considered.

If donors are used on a regular basis, they should be kept free of intestinal parasites and ectoparasites, and an adequate intake of vitamins, minerals and protein should be ensured in their diet. In addition, accurate records should be kept of their laboratory tests, vaccination dates, dates of blood donation and amounts taken.

#### Collection of blood

For more specific advice on the ethical and legal position on the collection of blood from animal donors by practising veterinary surgeons, readers are referred to the 'Guide to Professional Conduct' issued by the RCVS (2000).

The jugular vein should be used; cats often require sedation with ketamine and diazepam or midazolam – acepromazine and medetomidine are not indicated. The venepuncture site should be surgically prepared. Once access has been obtained, blood should be allowed to flow freely to reduce activation of platelet and coagulation factors and to minimise tissue thromboplastin contamination.

For dogs, blood is collected into commercially available bags containing acid citrate dextrose (ACD) or citrate phosphate dextrose adenine (CPD-A1). These bags contain sufficient anticoagulant and are suitable for collecting between 405 and 495 ml of blood; the amount collected can be monitored by weighing the bag (1 ml of blood weighs approximately 1 g). Blood and anticoagulant should be gently mixed during collection to ensure adequate anticoagulation. Blood remaining in the tubing at the end of the collection process should be 'stripped' to allow it to mix with anticoagulant in the bag and the tubing then sealed.

In cats, blood is usually collected into plastic syringes containing

appropriate quantities of anticoagulant (for example, 1 ml of ACD per 5 ml of blood collected).

The amount of blood which can safely be taken without having to replace blood volume with fluids is 9 ml/kg from a dog and 6 ml/kg from a cat. Volumes of up to 18 ml/kg from a dog and 12 ml/kg from a cat can be removed if fluid replacement is provided. A reasonable maximum frequency of bleeding is probably once every two to three months. In absolute emergencies, blood donations can be made more frequently (at intervals of around 21 days).

Blood may be collected from animals presented for euthanasia (for reasons other than ill health) with the consent of the owner. Anaesthesia should be induced intravenously and maintained with a gaseous anaesthetic. The neck should be surgically prepared and the carotid artery cannulated using aseptic techniques. Collection bags should be filled as described above.

#### Storage of blood and blood components

The container in which blood is to be stored should be marked clearly with the donor's identification, the date of collection and temperature of storage.

Canine erythrocytes stored in ACD solution remain viable for up to three weeks, while those stored in CPD-A1 are viable for four weeks. Feline erythrocytes stored in ACD solution are also viable for four weeks. Heparin has no preservative properties as an anticoagulant and is therefore not suitable for use in stored blood.



**Weighing the blood collection bag during canine blood donation ensures that the correct amount of blood is collected. A 'unit' of canine blood is considered to be 500 ml which weighs approximately 500 g**



**With the canine donor in a sitting position, blood is collected from a jugular vein. The blood collection bag should be held below the level of the patient and gently mixed during collection**

With time, blood cells stored at 4°C show a decrease in their ATP and 2,3-diphosphoglycerate (2,3-DPG) content, although gentle mechanical agitation of stored blood helps maintain these levels. For patients requiring a transfusion to provide immediate oxygen-carrying capacity, blood which has been stored for the shortest period of time should be selected. Following transfusion it takes three to eight hours for red cells to regenerate adequate levels of 2,3-DPG and 24 hours for restoration of complete function. Blood that has been warmed above 10°C and not used for transfusion purposes should be discarded and not returned to cold storage.

Whole blood stored for longer than eight to 12 hours will contain inadequate levels of active coagulation factors or functional platelets. If plasma can be separated from the blood within six hours of collection and frozen, active coagulation factors can be preserved for much longer (up to 12 months at -70°C and three months in a household freezer [-20°C]). Fresh frozen plasma is also a source of plasma proteins and can be used as a plasma volume expander. Red cells that remain after plasma separation are termed

'packed cells'; they can be stored for the same length of time as whole blood at 4°C.

To produce packed red blood cells and fresh frozen plasma blood collection bags with a satellite bag attached should be used. To achieve the best yield of plasma, access to a blood bank centrifuge through the Blood Transfusion Service or a local hospital is necessary. If this is not possible, the full collection bag should be left to stand in an upright position at 4°C for six hours. The longer the blood is left to stand the greater the yield of plasma, but the less value that plasma has in the treatment of animals with coagulopathies. The plasma layer can then be expressed into the satellite bag (commercially produced plasma extractors are available but home-made alternatives can prove more

than adequate) and frozen immediately. Production of other blood components (cryoprecipitate or platelet-rich plasma) is not practical in general veterinary practice unless the practice has good contact with its local Blood Transfusion Service.

#### Further reading

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## PETS to be extended

THE pilot Pet Travel Scheme (PETS) is to be extended at the end of January 2001 to include 15 rabies-free islands: Ascension Island, Australia, Barbados, Bermuda, Cyprus, Falkland Islands, Hawaii, Japan, Malta, Montserrat, New Caledonia, New Zealand, St Helena, Singapore and Vanuatu. Further islands may be added to the list at a later date.

MAFF has also announced some other important changes to PETS of which practices should be aware if any of their clients are considering bringing a cat or dog into the country under the scheme in the coming months.

#### UK laboratories

Two laboratories in the UK are now approved to test for antibody to rabies virus as required by PETS. BioBest, which is based at the Pentlands Science Park near Edinburgh, has joined the Veterinary Laboratories Agency (VLA) in offering this service, which should help to ease the backlog of samples awaiting testing. Practices can send samples to BioBest via their normal clinical pathology laboratories.

#### Export certificates and tattoos

The French authorities have agreed that a French version of the PETS certificate can be used instead of an export health certificate to accompany dogs and cats travelling to France from the UK. This document, entitled 'Export of a pet dog or cat to France in accordance with the Pet Travel Scheme' (PETS5), was due to be available for issue by Local Veterinary Inspectors (LVIs) at the time of going to press. In future, a PETS5 certificate will be issued along with each PETS1 re-entry document. Pet owners already in possession of a valid PETS1 certificate will be able to obtain a PETS5 certificate from any LVI on production of the original certificate.

MAFF has amended its legislation to recognise the French system of identifying cats and dogs, whereby the animal must first be tattooed with a unique number which is registered on a national database. The animal is then vaccinated against rabies, blood tested and finally fitted with a microchip. The owner's copy of the registration document is sent back to the database and returned to the owner with the

microchip number on it. This means that dogs and cats that have first been tattooed, in accordance with the rules of the country, and then vaccinated, blood tested and microchipped can qualify for travel to the UK under PETS, provided that the vet issues an official PETS certificate that shows that he/she has seen the registration document showing the microchip number.

Pets that are identified solely by tattoo do not meet the rules of the Pet Travel Scheme.

● More information on PETS, including 'Hidden health hazards for travelling pets', is available on the BSAVA website at [www.bsava.com](http://www.bsava.com) (in the Practice Resources section of the members area). This complements the BSAVA's general PETS leaflet and a letter, which can be written on the practice letterhead and given to those pet owners who have had their animals vaccinated against rabies, that provides a checklist in preparation for a journey abroad. There are also links to websites with useful vocabulary for clients visiting veterinary surgeons in France, Germany and Italy.



# Clinical research abstracts for Congress 2001

ABSTRACT forms are now available for BSAVA members wishing to submit work for presentation in the Clinical Research Abstract sessions at BSAVA Congress 2001. The abstract forms have been slightly modified this year and so potential authors are requested to apply for an up-to-date abstract form and instructions for submission.

The following points should be noted:

- On submission, authors will be asked to indicate whether it is their wish that the abstract be considered for publication in the *JSAP*. If that is the case and the abstract is accepted for presentation at Congress, the abstract will be subjected to further peer review and, if acceptable, will be published in the *JSAP* during the year following the Congress.
- It is our intention to encourage residents and PhD students to present their work at BSAVA Congress.

All presenters will, as usual, be entitled to free registration for the entire event.

● As in previous years, abstracts will be grouped according to discipline (for example, orthopaedics, cardiology, and so on). We intend to publicise the sessions more prominently this year to raise the profile of this important part of Congress.

Make a contribution to your own Congress! We look forward to receiving your submissions.

**Jonathan Elliott**

*Programme Committee Coordinator*

● The new abstract form and instructions for submission can be obtained from Miss Heather Roberts, BSAVA Headquarters, Woodrow House, 1 Telford Way, Waterwells Business Park, Quedgeley, Gloucester GL2 4AB, telephone 01452 726700, fax 01452 726701, e-mail h.roberts@bsava.com

## Education Committee's CE questionnaire

Earlier this year, those BSAVA members who completed and returned a CE questionnaire sent out by the Association's Education Committee became eligible for a free prize draw. The winner would be offered the choice of complimentary registration at BSAVA Congress 2001, free booking on any weekend course, or BSAVA Publications to the value of £250.

The draw was made at Woodrow House on June 28 by Mrs Lynn Turner, the BSAVA President. The winner, Dr Caroline Manser, who is currently working in practice, selected free Congress registration as her prize, although filling in the questionnaire apparently prompted her to look more closely at the CE courses leading her to book herself on to one!

The BSAVA's Education Committee is grateful to the 1889 members who returned their forms. The feedback is currently being analysed so that future courses can be tailored in line with members' recommendations.

## KNOW YOUR REGION

### Northern Ireland Region

*Paul Pollard, lecturer in animal health and welfare at Northern Ireland's Greenmount Agricultural College and secretary of the BSAVA's Northern Ireland Region, introduces the region and its committee*

THE BSAVA's Northern Ireland Region has a small but hardworking committee. This includes Gillian Alford (chairman) and Alistair Gibson (treasurer), both of whom are in small animal practice. As in all the Regions, the person who receives the least publicity, yet does an excellent job in raising much needed funds, is the Petsavers Representative. Naomi Hoy fulfils this role for the Region. Kate Alcorn also sits on the committee; Kate and Naomi are both working in practice.

Over the years, Northern Ireland Region has consistently provided a diversity of excellent CPD for its members. Members were polled last year in an attempt to discover which CPD topics they would find

most useful and the committee has tried very hard to accommodate their wishes. Although Northern Ireland is a small region, many meetings in recent years have tended to be in the Belfast area. By popular request, a conscious effort is now being made to try to arrange meetings throughout the province.

A recent trend, again resulting from feedback from our members, has been towards providing a greater number of one-day meetings and less evening meetings. This year alone we will provide seven and a half days of quality CPD, together with three evening meetings. This includes two full weekends. Our Region has also started to run practical wet labs, which are always

very popular. These have recently included courses on orthopaedic surgery and skin reconstruction techniques.

The highlight of our CPD calendar is our weekend congress in June. Our 26th consecutive conference next year promises to be an excellent event. It will be held in Belfast within easy reach of the airport so BSAVA members from all Regions will be able to experience a high standard of CPD, as well as a very sociable weekend. We are privileged to have two speakers of international repute – American dermatologists Danny Scott and Craig Griffin. Details of this and other events will appear in the regional section of the BSAVA website.

As with all the BSAVA Regions, Northern Ireland Region is continually looking for suggestions and committee volunteers. If you feel that you can help, please contact the secretary, Paul Pollard, telephone 028 4175 3769, or one of the other committee members

# Strategies for urban animal management



THE second WSAVA Animal Welfare Symposium, entitled 'Animal welfare issues in urban animal management', took place in Amsterdam in April just before the world congress.

A full day's programme allowed speakers from a number of countries to explain how strategies for urban animal management were implemented in their parts of the world.

The talks were preceded by an overview from Mr Ray Butcher, FECAVA Vice-President and consultant to the World Society for the Protection of Animals (WSPA), who explained some of the effects of differences in culture and economy on the implementation of stray animal control programmes. 'What is the definition of a stray animal?', he asked. In some countries this might be any animal found in a public place without identification, whereas in others, dogs might be accepted as part of a village community, despite not having one specific owner.

## Euthanasia

Mr Butcher pointed out that the threat of rabies was one of the main reasons that municipalities introduced control programmes. Often these were nothing more than methods of mass (and sometimes inhumane) destruction, which were generally ineffective. To address these problems, the WHO and WSPA had produced joint guidelines on population management, involving governments, local authorities, welfare groups and veterinarians. Mr Butcher stressed the important role of the international veterinary profession in persuading welfare groups that euthanasia had a part to play, but that those responsible should use humane methods. Identification and neutering, as well as environmental hygiene, effective enforcement and education, were also key aspects of any control method.



A dog being released back on to the streets of Jaipur, India, having been spayed, vaccinated and identified

Picture: R. L. Butcher

## Education – a key element

Some interesting facts emerged from the other presentations – for instance, that the Society for the Promotion of Animal Welfare was founded in Thailand as long ago as 1925 and, yet, in that country there is currently virtually no animal welfare legislation, apart from a small section on cruelty to animals in the 'Penal Code'. Urban animal welfare in Bangkok referred as much to wandering elephants as to the estimated 100,000 stray dogs. Speaking of these problems, Dr Parntep Ratanakorn suggested that the real reason lay in the lack of animal welfare education – in veterinary colleges as well as for the public. Education was the key to improving matters in the future.

In Chile, reported Dr Luis Tello, 40 per cent of the two million dogs and cats were homeless, despite laws forbidding stray animals on the streets. This did not appear to pose major problems for the human population: rabies no longer occurred, and the people viewed stray animals as 'partners', making them relatively 'untouchable' by the authorities, except in occasional blitzes. Although spaying of bitches and queens was relatively common, castration of males was extremely rare, so large groups of dogs often congregated during the breeding season and were a common cause of car accidents. New animal welfare legislation was currently under discussion in parliament, with signifi-

cant input from the veterinary association and universities.

Other equally interesting talks were given by Dr Lykourgas Klamarias from Greece and Professor Johannes Odendaal from South Africa, both of whom described the innovative ideas and special difficulties pertaining to their own countries.

The afternoon session covered more specific issues. Dr Ted Donelan, of Australia, reviewed the role of microchip programmes and databases registries, and the pitfalls and advances which have been experienced in the development of this essential tool for identification. Dr Bernard Rollins (USA) addressed 'Dogmatism and catechisms' – the ethical implications associated with companion animals in general.

Proceedings of this year's symposium are available (see right), and have been combined with those of the previous WSAVA Companion Animal Welfare Symposium, held in Buenos Aires in 1998. Entitled 'Companion animal welfare in disaster situations', these include presentations from Dr Larry Dee (USA) on experiences with Hurricane Andrew and the contingency plans now in place in Florida. In addition, Caroline Hebard (USA) describes utilisation of search and rescue dogs.

Maggie Gething

Copies of the Animal Welfare Proceedings can be obtained by contacting Dr Roger Clarke, Chairman of the WSAVA Animal Welfare Committee, e-mail rclarke@ava.com.au, fax +61 39467 7369

## Committee reports

The WSAVA Assembly meeting, held during the world congress in Amsterdam, provided an opportunity for the various committees to discuss their recent activities (see *BSAVA News* August 2000, p 381). The Right to Prescribe Committee, chaired by the WSAVA President, Dr Claudio Brovida, has recently conducted a survey on the use of chemotherapeutic compounds for oncology. The Specialisation Committee's latest report, meanwhile, includes brief details of standards and requirements for veterinary specialisation in all the WSAVA member countries. Both reports are available from the Honorary Secretary, Mr David Wadsworth, fax 01253 823627, e-mail david@wadders.demon.co.uk

Members are welcome at all meetings whether within or outside their Region. However, you are advised to check the details as changes of venue and date can occur, and some meetings have a limited number of places which need to be reserved in advance

For details of all BSAVA courses, contact Glenda Combe at the BSAVA headquarters in Gloucester, telephone 01452 726714, fax 01452 726701, e-mail adminoff@bsava.com. Availability can also be checked on the BSAVA website (www.bsava.com), which is updated weekly

## DIARY OF EVENTS

### SEPTEMBER

- 12 **ER – How to deal with a trauma patient** Speakers Jackie Brearley and Dick White. Day meeting at South Staffordshire Medical Centre, Wolverhampton, organised by *Midland Region*. Details from Charles Leggat, telephone 01455 615576
- 15 **Hereditary disease** Speakers Urs Giger and John Angles. Weekend general CE course at Stakis Bedford Brighton, organised by *BSAVA*
- 16 **Anaesthesia and analgesia** Speakers Derek Flaherty and Ann Mee. Weekend residential CE course for veterinary nurses at Greenbank House, University of Liverpool, organised by *BSAVA*
- 22 **Clinical haematology – what's new?** Speakers Urs Giger and John Dunn. Weekend advanced CE course at Stakis Bristol, organised by *BSAVA*
- 24 **Nursing the feline medicine patient** Speakers Myra Forster-Van Hijfte and Danielle Gunn-Moore. Day CE course for veterinary nurses at the Royal Veterinary College, Hatfield, organised by *BSAVA*
- 27 **Dentistry** Speaker Susan Penman. Evening meeting at Miskin Manor, Llantrisant, organised by *South Wales Region*. Details from Nick Hatton, telephone 01685 385117, fax 01685 377840
- 28 **Advances in feline internal medicine** Day meeting organised by *Southern Region*, with speakers from the University of Bristol Feline Unit. Venue TBA. Details from Tony Hilbery, telephone 01753 858877, fax 01753 853820
- 28 **Anaemia in the dog** Speaker Grant Petrie. Evening meeting at Gatwick Forte Post House, organised by *Surrey and Sussex Region*. Details from Mark Johnston, telephone 01892 653088, fax 01892 669799

### OCTOBER

- 4 **Endoscopy** Speaker Jimmy Simpson. Evening meeting at Doncaster Royal Infirmary PGMC, organised by *North East*

*Region*. Details from Freddie Marshall, telephone 01924 374111, fax 01924 299797

- 4 **Rabbit medicine** Speaker Anna Meredith. Evening meeting at Manchester Forte Post House Hotel, organised by *North West Region*. Details from Anthony Chadwick, telephone 0151 548 6826, fax 0151 548 2711
- 4 **Wildlife casualties** Speaker Andrew Routh. Evening meeting for veterinary nurses at Manchester Forte Post House Hotel, organised by *North West Region*. Details from Anthony Chadwick, telephone 0151 548 6826, fax 0151 548 2711
- 6 **Dermatological therapeutics** Speakers Ross Bond and Rory Breathnach. Weekend general CE course at Stakis Maidstone, organised by *BSAVA*
- 8 **Ultrasonography** Speakers Chris Lamb, Paul Mahoney and Paddy Mannion. Half-day workshop at the Royal Veterinary College, North Mymms, organised by *Metropolitan Region*. Details from Justin Yates, telephone 01295 259446, fax 01295 263111
- 11 **Critical care** Speaker Dan Holden. Evening meeting at Stakis Edinburgh Airport Hotel, organised by *Scottish Region*. Details from Anne French, telephone/fax 0131 447 8465
- 13 **Joint disease** Speakers Chris May and Andrew Coughlan. Weekend general CE course at Stakis Bedford Brighton, organised by *BSAVA*
- 18 **Taking the 'ugh' and the '?' factors out of the reptile consultation** Speaker Lance Jepson. Evening meeting at Miskin Manor, Llantrisant, organised by *South Wales Region*. Details from Nick Hatton, telephone 01685 385117, fax 01685 377840
- 18 **Canine gastroenterology** Speaker Ed Hall. Evening meeting at Derriford Hospital Medical Centre, Plymouth, organised by *South West Region*. Details from Stephen O'Shea, telephone 01752 702646, fax 01752 773305
- 18 **Rabbits – the third way** Speakers Dermot Malley and

Sharon Redrobe. Day meeting at the Royal Veterinary College, Camden Town, organised by *Metropolitan Region*. Details from Justin Yates, telephone 01295 259446, fax 01295 263111

- 20 **Reproduction in the dog and cat** Speakers Margaret Root-Kustritz and Lindy Vaughan. Weekend general CE course at Stakis Sheffield, organised by *BSAVA*
- 24 **Neonatology** Speakers Margaret Root-Kustritz and Diane Addie. Day general CE course at Stakis Bromsgrove, organised by *BSAVA*
- 26 **Present and future developments in cardiac therapeutics** Evening meeting at Winchester PGMC, organised by *Southern Region*. Details from Tony Hilbery, telephone 01753 858877, fax 01753 853820
- 26 **Diseases of the lens** Speaker Martyn King. Evening meeting at Brighton PGMC, organised by *Surrey and Sussex Region*. Details from Mark Johnston, telephone 01892 653088, fax 01892 669799

### NOVEMBER

- 3 **Exotic animal medicine and surgery** Speakers Scott Stahl and Lance Jepson. Weekend general CE course at Stakis Puckrup Hall, Tewkesbury, organised by *BSAVA*
- 7 **Exotic animal anaesthesia** Speakers Scott Stahl and Paul Flecknell. Day general CE course at the BSAVA Headquarters, Woodrow House, Gloucester, organised by *BSAVA*
- 11 **Feline traumatology and orthopaedics** Autumn weekend meeting at The Moller Centre, Cambridge, organised by the *British Veterinary Orthopaedic Association*. Details from Sorrel Langley-Hobbs, telephone 01223 337653, fax 01223 330848
- 17 **Ophthalmology** Speakers David Ramsey and Gillian McLellan. Weekend refresher CE course at Stakis Maidstone, organised by *BSAVA*
- 24 **Selected topics in ophthalmology** Speakers David Ramsey and Peter Renwick. Weekend advanced CE course at Stakis