

Kris Gommeren

Point-of-Care Ultrasound (POCUS) for Vascular Access and Phlebitis Assessment in Small Animal Emergency and Critical Care | *Kris Gommeren*

Introduction to POCUS in Veterinary Medicine

- Definition and applications of point-of-care ultrasound in small animal practice.
- Benefits: rapid, non-invasive, and real-time imaging, particularly valuable in emergency and critical care settings.

Vascular Access Using POCUS

1. Challenges of Traditional Vascular Access
 - o Difficulty in accessing veins in dehydrated, hypovolemic, or critically ill patients.
 - o Limitations of blind techniques, particularly in small or collapsed vessels.
2. Advantages of Ultrasound-Guided Vascular Access
 - o Enhanced visualization of vessels.
 - o Improved success rates, especially in difficult cases.
 - o Reduction in complications such as accidental arterial puncture or hematoma formation.
3. Techniques for Ultrasound-Guided Vascular Access
 - o Equipment overview: high-frequency linear probe for small animals.
 - o Preparation: patient positioning, probe orientation, and aseptic technique.
 - o Short-axis (out-of-plane) vs. long-axis (in-plane) approaches.
 - o Tips for optimizing visualization: applying appropriate pressure and using ultrasound gel.
4. Practical Applications
 - o Placement of peripheral and central venous catheters.
 - o Real-time guidance for challenging cases (e.g., small patients, shock, obesity).

Assessment for Phlebitis Using POCUS

1. Understanding Phlebitis
 - o Definition: inflammation of a vein often due to mechanical or infectious causes, such as prolonged catheter placement or thrombophlebitis.
 - o Clinical significance in small animals: pain, swelling, systemic complications.
2. POCUS Evaluation of Phlebitis
 - o Identifying sonographic signs:
 - Vein wall thickening or irregularity.
 - Perivenous hypoechoic or anechoic areas indicating edema or fluid.
 - Echogenic intraluminal material suggestive of thrombosis.
 - o Differentiating phlebitis from other conditions (e.g., cellulitis, abscess).
3. Monitoring and Follow-Up
 - o Use of POCUS to track progression or resolution of phlebitis.
 - o Adjusting catheter management based on ultrasound findings.

Case Examples

- Walkthrough of real-life cases illustrating the use of POCUS for vascular access and phlebitis detection.
- Challenges encountered and lessons learned.

Tips and Best Practices for Implementing POCUS

- Training and skill acquisition for small animal practitioners.

- Equipment considerations and maintenance.
- Establishing protocols for vascular access and phlebitis assessment.

Conclusion

- POCUS is a valuable tool in small animal emergency and critical care for improving vascular access success and diagnosing complications like phlebitis.
- Incorporating ultrasound into routine practice can enhance patient care and outcomes.

Q&A Session

- Opportunity for veterinarians to discuss specific challenges, share experiences, and clarify doubts.

This lecture equips small animal veterinarians with practical knowledge and techniques to enhance their use of POCUS in emergency and critical care settings.

Key Takeaways from the VECCUS POCUS Day | *Kris Gommeren*

This summary consolidates the insights that will be shared during the VECCUS day of lectures on point-of-care ultrasound (POCUS) in veterinary emergency and critical care. The program will cover diverse topics, showcasing how POCUS is revolutionizing diagnostics and patient management in small animals. The topics, which can be consulted on the EVECC and VECCUS program are

1. Vascular Access Sites and Phlebitis (Kris Gommeren)

- Key Points:
 - o POCUS enhances success in vascular access, particularly in challenging patients with small or collapsed veins.
 - o Sonographic indicators of phlebitis include vein wall thickening, irregularity, and echogenic intraluminal material.
 - o Practical strategies to integrate ultrasound into daily practice were highlighted.

2. Alveoli Recruitment/Atelectasis (Angela Briganti)

- Key Points:
 - o Lung ultrasound can detect atelectasis and guide alveoli recruitment maneuvers.
 - o Specific signs such as consolidations, the absence of lung sliding, and B-lines will be discussed.
 - o Case examples will demonstrate how POCUS optimizes ventilation strategies.

3. Diaphragmatic Excursion and Ventilation (Angela Briganti & Chiara Di Franco)

- Key Points:
 - o Measuring diaphragmatic excursion helps evaluate respiratory function.
 - o POCUS provides real-time feedback on ventilation efficacy and supports weaning decisions.
 - o Techniques to measure diaphragmatic motion in both dogs and cats will be reviewed.

Morning Keynote: How POCUS Changed Our Lives in Acute Human Medicine (Radovan Radonic)

- Key Points:
 - o Lessons from human medicine emphasize POCUS's role in rapid diagnosis, patient triage, and treatment optimization.

- o Case studies will demonstrate how integrating POCUS transformed critical care workflows and outcomes.
 - o Encouragement to translate similar methodologies into veterinary settings.
4. Alphabet Lung Lines (Hugo Swanstein & Søren Boysen)
- Key Points:
 - o Comprehensive guide to interpreting lung artifacts such as A-lines, B-lines, and Z-lines.
 - o Importance of recognizing patterns to differentiate normal and pathological findings.
 - o Application of lung ultrasound in conditions like pneumonia, edema, and ARDS.
5. Case-Based POCUS (Corrin Boyd)
- Key Points:
 - o Interactive session showcasing real-life clinical scenarios.
 - o Emphasis on decision-making and integrating POCUS findings into treatment plans.
 - o Common pitfalls and troubleshooting strategies.

6. POCUS in Cats vs. Dogs (Ivayla Yozova)

- Key Points:
- o Anatomical and physiological differences between species impact ultrasound findings.
- o Tailoring techniques to each species improves accuracy and patient comfort.
- o Practical examples will highlight common conditions like pleural effusion and pericardial effusion in cats versus dogs.

7. Ultrasonographic Assessment in States of Shock (Alexandra Nectoux)

- Key Points:
- o POCUS aids in differentiating shock types: hypovolemic, cardiogenic, obstructive, and distributive.
- o Key ultrasound windows include the heart, lungs, and abdomen.
- o Real-time guidance for fluid therapy and vasoactive drug use will be discussed.

8. When the Pitfalls Are Unknown, the Abuse Is Inevitable (Alessio Vigani)

- Key Points:
- o Misinterpretation of POCUS findings can lead to diagnostic errors.
- o Importance of training and understanding limitations to prevent misuse.
- o Strategies to enhance diagnostic confidence and reduce overreliance on ultrasound findings.

9. VECCUS Panel Update & Research Grant Award

- Key Points:
- o Updates on recent advancements in veterinary POCUS research and applications.
- o Announcement of the latest research grant recipients, fostering innovation in the field.

Final Reflections

- The day will highlight the versatility and transformative potential of POCUS in veterinary emergency and critical care.
- Key themes will include improving diagnostic precision, guiding therapeutic interventions, and avoiding misuse through proper training.

- The VECCUS initiative continues to drive progress in POCUS education and research, inspiring practitioners to adopt and refine this invaluable tool. This event underscores POCUS as an indispensable modality in advancing patient care and outcomes.