

DoveLewis[®]
**Third Thursday
Rounds**

July 15, 2021

**The Far-Reaching Effects of
Hypothermia**

Presented by

Sarah Harris, CVT, VTS (ECC)

-
- 2 Virtual Experience Guide
 - 3 Lecture Notes
 - 7 Blank Lecture Paper
 - 9 VetWrap
 - 10 What We Bring podcast

DoveLewis
**Third Thursday
Rounds**

Virtual Third Thursday: Attendee FAQ's

Do I need to create my own Zoom account to attend?

No. You can access the webinar through the link in your confirmation email. Click the link that says, "Click Here to Join" at the time of the lecture.

Is there someone to help if I have trouble accessing the lecture?

Yes. Please reach us at contact@dovelewis.org if you're experiencing difficulties joining the meeting. During the lecture, you can use the "Raise Hand" function and someone will be able to help you.

Is attendance tracked?

Yes. As you register for the Zoom meeting, you will be asked to enter your information. Attendance is tracked for RACE records.

Is this lecture RACE approved?

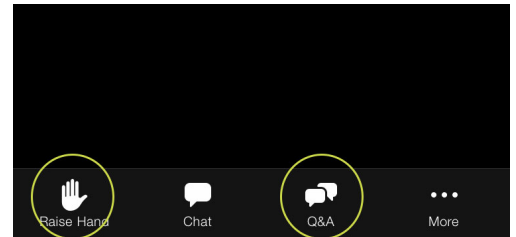
Yes. This lecture is RACE-Approved for one Interactive-Distance CE credit. You will receive an emailed certificate of attendance within one business day after the event.

Will I be able to ask questions?

Yes. If you have questions during the lecture, please use the Q&A function to submit your question. We will save questions for the end of the lecture.

Will I be able to talk?

No. All attendees will be in listen-only mode. If you have a question or need help, the Q&A or Raise Hand function.



Will the presenter or other attendees be able to see me?

No. All attendees will only have the capability to listen to the presenter.

How will I get my certificate?

You must register by using the Zoom link to prove attendance. You will receive an emailed certificate of attendance within one business day after the event.

Do I have to answer the poll questions?

No. The poll questions are optional, but we encourage you to try!

Can I record the lecture?

No. The lecture will only be recorded by DoveLewis, and will likely be available on atdove.org at a later date.

For more support, please email contact@dovelewis.org

Hypothermia is a common finding in veterinary medicine, but often the negative impacts are greatly underestimated. This lecture will discuss the potential causes of hypothermia, the systemic consequences, and safe prevention and correction options. Attention will be given to at-risk patients including the critically ill, surgical, geriatric, neonatal, and exotic species.

This lecture will provide learning opportunities for both beginning and advanced technicians wanting a review on the thermoregulatory system and how to better provide for our patients.

Hypothermia:

Definition: subnormal body temperature

Primary Causes: environmental exposure

Secondary Causes: injury, illness, or drug induced

Thermoregulatory System:

Homeothermy= a balance between heat loss and heat gain

Cold and Warm receptors are located throughout the body

Pathways

Sensing

Located in the periphery

Afferent pathways: obtains signal and then transports to the CNS

Regulation

Centrally located

Hypothalamus- primarily responsible for central thermoregulation
(Central thermostat)

Responses

Efferent pathways: CNS system sends messages to the periphery

Stages of Hypothermia (Cat/Dog):

Mild Hypothermia	>98°F (36.7°C)
Moderate Hypothermia	96°F-98°F (35.6°C-36.7°C)
Severe Hypothermia	92°F-95°F (33.3°C-35°)
Critical Hypothermia	<92°F (33.3°C)

The Four Mechanisms of Heat Loss:

- 1) Radiation
- 2) Convection
- 3) Conduction
- 4) Evaporation

Patients at-risk for Hypothermia:

- Neonates
- Geriatrics
- Cachexic
- Anesthetized patients
- Patients experiencing:
 - Endocrinopathies
 - CNS disorders
 - Hypoperfusion
 - Decreased cardiac output
 - Immobility
 - Thermal Injury
- Exotic Species

Physiologic Consequences of Hypothermia:

- Cardiovascular effects
- Respiratory effects
- Immune System effects
- Metabolism effects
- Electrolyte Imbalances
- Hemoconcentration
- Coagulopathies
- Neurologic effects

The Relationship between Anesthesia and Hypothermia:

Interruption of normal thermoregulatory responses:

- Reduced metabolic rate
- Altered hypothalamic function
- Reduced muscle tone
- Loss of behavioral responses
- Significant thermal stresses on patients

Stages of anesthesia:

Induction:

- Largest rate of heat loss occurs from induction-1st 20 minutes
- Heat is redistributed from core to periphery
- Premedication/sedatives/ tranquilizers
 - Depress the hypothalamus
 - Can cause vasodilation (E.g., Acepromazine)

Maintenance/Perioperative:

- Isoflurane and Sevoflurane are potent vasodilators
 - Fully dilated vessels lose heat up to 8x faster than fully constricted vessels
- Inhaled oxygen contributes to hypothermia
- Adequate plane of anesthesia
 - Loss of centrally mediated thermoregulatory vasoconstriction
- Decreased metabolic rate (at approximately 15%-40%)
- Inhibition of muscular activity
- Decreased heat production

Recovery

- Hypothermia is primary contributor to prolonged recovery
 - Delayed metabolism
- Oxygen supplementation
- Heat support discontinued at 98.5°F (37°C)
 - Monitor temperature for 1-2 hours to watch for after-drop

Tips for Preventing Hypothermia in the OR

- Prepare and work efficiently
- Avoid over-wetting patient
- Use lowest achievable inhalant + oxygen flow rates
- Wrap extremities (bubble wrap/socks)
- Cover patient with warm blanket during prep
- Use warmed fluids for cavitory lavage
- Utilize heated table, BAIR hugger, or Hotdog and IV fluid warmers as available

Treatment of Hypothermia

Passive warming

Normothermic → mild hypothermia

Active internal warming

Mild → moderate hypothermia

Active external warming

Intraoperative & severe hypothermia

Precautions of Warming

Increased risk of thermal injury:

Misuse of equipment leads to increased risk of thermal injury

Debilitated animals with decreased peripheral hypoperfusion

Microwave use to warm rice bags, discs, or water bottles

Electric blankets/pads

Exotic Considerations

Extremely susceptible to hypothermia

High body surface-to-mass ratio

Many exotic species are equally susceptible to hyperthermia

Temperature is one of the easiest vitals to monitor

Thermometers may not go low enough for some exotic species

Use radiant heat lamps with extreme caution

DoveLewis
**Third Thursday
Rounds**

My Lecture Notes

DoveLewis
**Third Thursday
Rounds**

My Lecture Notes



DoveLewis Veterinary Emergency & Specialty Hospital
1945 NW Pettygrove St. Portland, OR | P 503-228-7281 F 503-228-0464 W dovelewis.org

VetWrap

Volume 15, Issue 2

Stabilizing Thoracic Limb Fractures

[Read more](#)

04 How to Get What You Need

[Read More](#)

12 Blocked: Urethral Obstructions in the Male Cat

[Read More](#)



WHAT WE BRING

HUMAN STORIES IN VETMED

ATDOVE.ORG'S NEW PODCAST HIGHLIGHTS THE HUMANS BEHIND THE ANIMALS WE CARE FOR

This past year has had a unique impact on the veterinary industry as we all have had to adjust to new protocols, increased patient counts, and more.

Our new podcast, *What We Bring*, offers an inside look at the stories and experiences of people who care for our pets. We hope you'll join us!

ABOUT THE SHOW

When we walk onto the floor for our shift, we all bring with us our own unique stories. *What We Bring* examines the human experiences of those working in veterinary medicine, from the front desk to the O.R. Join DoveLewis Veterinary Well-Being Director Debrah Lee, LCSW, as she explores the real human stories behind the animals we care for.

We hope this podcast will shine a light on the experiences (good and bad) we bring with us to the clinic, and help move us towards greater openness and understanding as an industry. We know that not every lesson can be found in textbooks and training plans, so we're turning to each other to connect, listen, learn, and grow.



WHERE TO FIND US

Click [here](#) to listen to the first episode where we explore imposter syndrome, client compassion, and more with emergency CVT Kara.



MEET HOST DEBRAH LEE, LCSW

Debrah Lee, LCSW, joined the DoveLewis team in 2020 as the Veterinary Well-Being Program Director. Coming from a background in human healthcare, Debrah has long had an interest in how emotionally-demanding medical settings affect both patients and providers. Debrah brings a compassionate presence and deep appreciation for the human experiences that connect us, and she is eager to learn more from veterinary professionals about their experiences within the world of veterinary medicine.



Refer Patients Easily Online

TAKE YOUR REFERRAL EXPERIENCE TO THE NEXT LEVEL

- Refer patients quickly 24/7
- Upload patient records and images easily
- Update referral records after submission
- Access team tools like cost guides and checklists
- Save time off of the phone!

Explore the Portal

DOVELEWIS.ORG/VETERINARY-PORTAL

DOVELEWIS IS HIRING!

See what opportunities there are for you to join our dedicated team of medical professionals, customer service experts, business staff, and community outreach representatives.

Apply Today!

DOVELEWIS.ORG/CAREERS





Online Training, Whenever You Need It

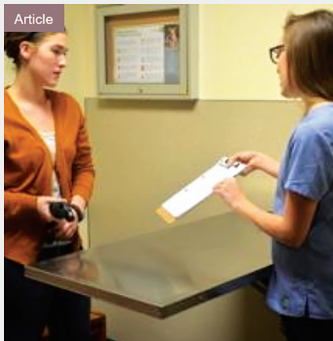
You and your team all have different learning goals, and we've got you covered. [Atdove.org](https://atdove.org) is your all-in-one online training resource that connects the whole team with high-quality training materials covering a wide range of topics. You can find resources on anything from basic restraint to client communication to advanced surgical techniques, and you can revisit materials whenever you need. Progress is saved directly to your profile and you can access certificates at any time.

Your First Week Is Free!

Activate your week-long trial by going to atdove.org and see what we can offer your team!

Efficient Recording Sharing: A CSR's Perspective

Article



Facial Mass Removal

Video



Handling Hedgehogs for Exams

Video



How to Put on Personal Protective Equipment (PPE)

Video

