Tips for Safe Thermoregulatory Support in Unconscious Animals (TAMU-G-002, TAMU-G-013)

Thermoregulatory support is expected during anesthesia and recovery for procedures resulting in loss of consciousness lasting longer than 15 minutes. This document outlines safety considerations, preferred methods, and essential guidelines for thermoregulatory support. Support may also be provided for shorter procedures at the discretion of the research team.

Unsafe/ Discouraged Methods: Certain warming methods carry significant risks due to the potential for burns or hyperthermia in animals that cannot move away from the heat source. If approved, some must be wrapped in insulating layers and never placed directly against the skin. Continuous monitoring of the animal's temperature is essential. Requires description in the AUP, including training of lab staff and IACUC approval.

- **Gel-type warming pads heated in a microwave or with hot water (e.g. Snuggle Safe)**: Uneven heating; can have hot spots with risk of burns.
- **Devices designed for human use (e.g., electric heating pads or other microwaveable gel packs)**: Inconsistent heating and lack of safety features.
- **Heat lamps**: Can result in severe burns or hyperthermia.

Recommended Safer Alternatives: The IACUC prefers systems that provide consistent, controlled heat, minimizing the risk of complications. The use of safe equipment is required, unless otherwise described in the approved AUP.

- **Isothermic Pads (e.g. Deltaphase Isothermic Pad)**:
  - **Self-regulating temperature**: Utilizes phase-change materials that maintain a constant temperature, reducing the risk of burns as they do not exceed the target temperature.
  - **No electric power source**: Eliminates risks associated with electric heating devices.
  - **Gradual heat release**: Provides consistent warmth over time without sudden temperature spikes.
- **Hot Water Circulating Pads**: These use a controlled water bath to circulate warm water through a pad, offering consistent and adjustable heat.
- **Forced-Air Warming Systems (e.g., Bair Hugger, Cocoon)**: Provide even, adjustable heat and are considered safe.
- **Fluid Warmers**: Warm IV fluids directly to maintain core temperature.

Usage Guidelines and Monitoring for Thermoregulatory Support

- **Barrier Placement**: **Always place a barrier** (e.g., towel or drape) between any warming pad and the animal.
- **Temperature Monitoring**: Monitor the animal's core temperature or environment while unconscious/ recovering.
- **Recovery Environment**: Ensure the animal recovery environment doesn't pose a risk of injury.
  - For rodents recovering in cages, the cage should be **placed half on/ half off the heat source**.
- **Exceptions**: If requesting an exception to allow for the use of "less safe" technology, the AUP must include a description of continuous observation of the animal and address how the temperature will be monitored.

Available Veterinary-Specific Products: Examples of products designed for veterinary use include:

- **Kent Scientific Animal Heating Pads**: Designed for lab and veterinary use, including circulating water pads.
- **Dispomed Hot Water Circulating Pads**: Durable and adjustable for clinical use.
- **VetPro Warming Systems**: Often used in surgical and recovery settings.
- **Deltaphase Isothermic Pad**. Maintains a constant temperature.

Other Off-Label Products to Consider:

- **Plant/ seedling heating mats:** Inexpensive, off-label veterinary use, may be considered safe when used with a thermostat. Requires description in the AUP.
  - VIVOSUN Seedling Heat Mat and Digital Thermostat Combo

For further guidance on thermoregulatory support or specific equipment, **consult with the Attending Veterinarian (AV) or designee**.