

By improving pain treatment, therapy in dogs, research offers medical insight for humans

September 25 2012

A Kansas State University professor's research improving post-surgery pain treatment and osteoarthritis therapy in dogs may help develop better ways to treat humans for various medical conditions.

From the use of hot and cold packs to new forms of narcotics, James Roush, professor of [clinical sciences](#), is studying ways to lessen pain after surgery and improve care for [small animals](#), particularly dogs. He is working with the clinical patients who come to the College of Veterinary Medicine's Veterinary Health Center.

Because humans and dogs experience some diseases in similar ways, his research may improve how doctors and physicians understand [human health](#), too.

"Several of our projects have human applications, particularly one involving intra-articular prolotherapy," Roush said.

Here's a closer look at three of Roush's current projects:

* A recent project with Ralph Millard, former Veterinary Health Center resident, focuses on ways that hot packing and cold packing affect [tissue](#) temperature in beagles and beagle-sized dogs after surgery.

After surgery in both humans and dogs it is common to put a cold pack

or hot pack on tissue to prevent and reduce swelling. How long the pack is used and what type of cold or hot pack is used depends on the type of injury and surgery. Roush said that no studies have looked at how deep in the tissue the packs affect temperature and how long the packs must be applied so that the tissue reaches a desired temperature.

The researchers studied the temperature and tissue depth that hot and cold packing affected and the time it took to reach that temperature.

"We found that you don't really need to cold pack anything longer than 10 minutes because there is not a great change in temperature after that," Roush said.

When tissue is cold packed, it will stay cold for a while after the ice pack is removed. But when tissue is hot packed and the pack is removed, the tissue temperature will return to normal much more quickly. Leaving the hot or cold pack on the tissue longer than 10 minutes will extend the time that the tissue stays at the same hot or cold temperature, Roush said. There just will not be a great change in temperature after 10 minutes.

The same technique of hot and cold packing after surgery is also used in humans. Although more research in humans is needed, Roush said there is a strong possibility that a similar 10-minute time frame for hot and cold packing may apply to humans as well.

The research appears in two upcoming publications in the *Journal of Veterinary Research*.

* For another project, Roush and Matt Sherwood, Veterinary Health Center resident, are using a mat system to study lameness and osteoarthritis in dogs. When dogs step on the mat, it measures the pressure in their step.

The mat system is a useful clinical tool for evaluating and developing treatment of lameness, Roush said. Roush and Sherwood are using the mat for measuring lameness and determining in which leg the lameness is worse.

"We've designed the study to help improve [osteoarthritis](#) treatment," Roush said. "We will also use it to measure clinical patients when they come in for regular checkups. We can measure their recovery and a variety of other aspects: how they respond to nonsteroidal anti-inflammatories, how they respond to narcotics or how they respond to a surgical procedure that is designed to take that pressure off the joint."

* Roush also is working with Marian Benitez, Veterinary Health Center resident, on an analgesic pharmacology study. Rose McMurphy, professor of clinical sciences, and Butch KuKanich, associate professor of anatomy and physiology, are also involved.

The researchers are studying the effectiveness of a painkiller used to treat dogs and researching potential alternatives to the drug. The same drug also is commonly used to treat pain in humans.

"To achieve the drug's effect, the dosage in dogs is much higher than in people," Roush said. "It also may not be a very good analgesic in [dogs](#). We want to see if there is an alternative that requires smaller doses and does not have not as much of a discrepancy for patients."

Provided by Kansas State University

Citation: By improving pain treatment, therapy in dogs, research offers medical insight for humans (2012, September 25) retrieved 25 April 2024 from <https://phys.org/news/2012-09-pain-treatment-therapy-dogs-medical.html>

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