The hospital recently opened the Interventional Radiology (IR) Surgery Suite in the Small Animal Clinic. The suite, complete with all new equipment, has elevated the type of surgeries the Soft Tissue Surgery Service is able to perform, as well as those surgeries' quality and effectiveness. Performing as many as 10 IR procedures a week, UC Davis has the largest IR caseload of any teaching hospital.

IR is a specialty in veterinary medicine that utilizes imaging modalities (fluoroscopy, ultrasound, computed tomography) to perform minimally invasive procedures for diagnostic and therapeutic purposes. IR techniques can be used to treat a myriad of diseases, and these procedures often allow potential treatments in cases that may have previously been thought to be without options.

The history of IR is short, beginning in early- to mid-2000s at the University of Pennsylvania. UC Davis surgeons Drs. Bill Culp, Philipp Mayhew, and Michele Steffey were all part of that team at Penn, and brought that knowledge to Davis to position the VMTH as a world leader in veterinary IR. The program continues to evolve and grow.

IR is currently being utilized as treatment of intrahepatic portosystemic shunts, ureteral obstructions, esophageal obstructions, intravascular foreign bodies and many other conditions. Being minimally invasive procedures, the surgeries allow patients to recover quicker and offer much better expectancy outcomes than invasive surgeries. The ever advancing IR procedures have opened up an entire new area of medicine that did not exist less than one generation before.
On September 14, the UC Davis veterinary hospital received the first of what would become dozens of animals from the Valley and Butte Fires over the following three weeks. In total, the hospital treated 56 animals – 40 cats, 5 chickens, 4 horses, 2 pigs, 2 goats, 2 dogs, and 1 rabbit. In order to accommodate the sudden influx of patients, faculty and staff worked long hours (volunteering nights and weekends) to care for the animals and to transpose areas of the hospital into makeshift care wards.

As the Valley Fire first broke out, a team of veterinarians from several entities of the School of Veterinary Medicine—the Veterinary Emergency Response Team (VERT), Center for Equine Health (CEH), the veterinary hospital’s Large Animal Clinic (LAC) and the International Animal Welfare Training Institute (IAWTI)—performed search and rescue missions and cared for animals in the fire zones. The team—comprised of VERT founder and LAC clinician Dr. John Madigan, Dr. Eric Davis, CEH Director Dr. Claudia Sonder, and IAWTI’s Drs. Patricia Andrade and Robin Chadwin—went door-to-door, ranch-to-ranch, looking for animals that had to be left behind as the fires approached so rapidly the residents barely had time to get out with their lives. Later the next week, LAC residents Drs. Emily Berryhill, Rana Bozorgmanesh, Emily Schaefer, and Fiona Wensley also ventured to the field to care for animals in both fire zones.

Meanwhile, back at the hospital, a team of veterinarians, animal health technicians and students—led by Dr. Steven Epstein, a specialist in the Small Animal Clinic’s Emergency and Critical Care Service—worked tirelessly on the admitted animals. The “all hands on deck” situation called for coordination from every level of the hospital, with faculty, staff and students all coming together to make the influx of emergency patients as smooth as possible. All of this was handled during a time when the specialty hospital was already at nearly 90 percent capacity with normal patients unrelated to the fires.

At 9 p.m. on a Saturday night—normally a quiet time at the hospital—the halls were bustling with foot traffic. Students filled a care ward, tending to the burned cats, some of which were just small kittens longing for affection from anyone who came near the cages. Technicians and emergency room veterinarians, weary from a long week, continued on, knowing the next day was bringing more of the same.

Faculty and resident veterinarians were called in from other Services, and each were assigned animals to treat. Drs. Boaz Arzi, Christie Balcomb, Ingrid Balsa, Emily Berryhill, Angela Borchers, Laura Cagle, Munashe Chigerwe, Bill Culp, Gina Davis, Pete Dickinson, Sophie Doering, Pablo Espinosa-Mur, Kate Farrell, Fabrice Fosset, Lisa Gamsjaeger,
Sara Gardhouse, Crystal Garnett, Molly Gleeson, Catherine Gunther-Harrington, David Guzman, Michelle Hawkins, Meera Heller, Guillaume Hoareau, Sabrina Hoehne, Sean Hulsebosch, Karl Jandrey, Michael Kent, Shannon Kerrigan, Isabelle Kilcoyne, Casey Kohen, Marguerite Knipe, Tania Kozikowski, Mary Lassaline, Gabriele Maier, Stephanie Majeski, Julie Meadows, Matt Mellema, Elizabeth Montgomery, Carrie Palm, Marcos Perez-Nogues, Tami Pierce, Fauna Smith, Peter Stroem, Noemie Summa, Jennifer Surmick, Jessie Sutton, Paolo Tempini, Albert Torrent Crosa, Katarina Varjonen, Karen Vernau, Johanna Wolf and Alyse Zacuto all volunteered their expertise to treat the animals.

Veterinarians also pitched in with media interviews to help the hospital get the word out to the community about the unclaimed cats and to promote the public donation fund established to help cover expenses. In all, 18 media interviews were given in two weeks – more interviews than the hospital has ever done in that span of time. Interviewed were Drs. Munashe Chigerwe, Gina Davis, Steven Epstein, Casey Kohen, John Madigan, Jane Sykes, and Erik Wisner, who as an associate hospital director, fulfilled the majority of the hospital leadership needs throughout the crisis. Also contributing leadership roles were Penny Farnham, Dr. Kate Hopper, Dr. Pam Hullinger, David Lish, Dr. Gary Magdesian, Marika Pappagianis, Cheryl Stafford, Dr. Jane Sykes and Rob Warren.

Through microchips and photographs on the school's Facebook page, VMTH personnel were able to reunite 16 cats and one of the goats with their owners. All of those owners lost everything in the fires, but reunions with the animals lit up their otherwise damaged worlds.

Perhaps the hardest working members of the team were the staff members, especially the patient care technicians. Going above and beyond included: Liz Abell, Brenda Arroyo, Raeleen Avila, Debra Bugarin, Truc Cao, Brandie Cates, Melissa Cavazos, Megan Cheney, Kathleen Davis, Robin Fisher, Ian Harbison, Briana Holland, Cole Jacobsen, Teri Joseph, Michael Juarez, Jennifer La Sance, Ryan Leffingwell, Nicole Lietz, Amanda Lothian, Gina Malcolm, Melissa Marks, Corinne Morgan, Sophia Najera, Sarah O'Neill, Kristina Palmer, Brianna Primas, Nikki Rochin, Courtney Sadler, Kristen Sein, Lorrie Spring, Kim Stockard, Carol Tower, Thomas Wassersleben, Hope Watts and Stacey Zindel.

While all of these technicians were busy tending to the animals from the fire, their colleagues were also busy with the hospital’s normal caseload of patients unrelated to the fire. Contributing indirectly by filling the void left by tending to the fire animals, those technicians are to be thanked, too.

Lastly, a big thank you to the client services staff, who fielded hundreds of phone calls from owners trying to track down their animals. Not to be forgotten, of course, are our students who were always willing to step in and lend a helping hand whenever needed. Although an unfortunate circumstance, this experience proved to be a valuable learning opportunity for them.

Congratulations, team, on a job beyond well done!
Hospital Welcomes New Leadership

With the departure of Dr. David Wilson from role of hospital director (as he becomes director of Veterinary Medical Center Facilities Planning), Dr. Jane Sykes has stepped in to lead the hospital on an interim basis while a national search begins for a new permanent director. Dr. Sykes has been a faculty member at UC Davis since 2002, and has previously served the hospital as chief of the Small Animal Internal Medicine Service, infectious disease control officer for the Small Animal Clinic (SAC), and most recently as director of the SAC. She is excited to have the opportunity to work with all the faculty and staff to continue her efforts to improve VMTH operations and maintain the hospital’s outstanding international reputation for excellence in patient care, teaching and clinical research.

Outside of UC Davis, Dr. Sykes served as president of the Specialty of Small Animal Internal Medicine within the American College of Veterinary Internal Medicine. She also served as president of the International Society for Companion Animal Infectious Diseases, an organization she co-founded in 2006, and is the author of the textbook *Canine and Feline Infectious Diseases*. Dr. Sykes hails from Melbourne, Australia. Prior to coming to UC Davis, she completed a residency at the University of Minnesota, where she also served as a clinical faculty member.

Meanwhile, as Dr. Sykes relinquishes her SAC directorship, Dr. Kate Hopper takes over that role on an interim basis.

Dr. Hopper, also chief of the Small Animal Emergency and Critical Care Service, has been at UC Davis since 1999. Last year, she led the Emergency and Critical Care Service to its busiest year, as it saw more than 4,000 patients.

Prior to joining the UC Davis team, she served as a veterinarian for several years in her native Australia, including a residency in Small Animal Emergency and Critical Care at Melbourne University. Upon coming to Davis in the late ‘90s, Dr. Hopper completed a second residency, became board certified, and joined the faculty. An award winning instructor, Dr. Hopper’s textbook *Small Animal Critical Care Medicine* is currently in its 2nd edition.

Thanks and Praise from Grateful Clients

“When I picked up my dog Tahoe, we ran quickly to the car because the blacktop was hot. I opened the car remotely and threw in my purse, satchel and, inadvertently, my car keys. Tahoe jumped in, and I closed the car door, accidentally locking him inside. The reception staff quickly called in my emergency, and parking services came and, as quick as a wink, opened the door.”

– Victoria C., Lodi, California

“Thank you to the folks at UC Davis that are helping the animals from the Valley Fire. It was devastating to see so much loss in my hometown of Kelseyville, but it makes me really proud to see what our community is doing and how the people from UC Davis are helping. Really proud to be an Aggie.”

– Wendy G., Vacaville, California

“We never realized the depth of care and knowledge at UC Davis until we had to bring our dog in by referral. We’re blessed to have you so close.”

– Caetie S., Elk Grove, California

“Thank you for all you are doing to treat animals from the fires. Seeing the burned animals, hurt and scared, is hard, but seeing them being reconnected with their families is heartwarming.”

– Beth S., Healdsburg, California
For more than a year, several hospital Services have joined forces to achieve success treating blocked tear ducts. When structures of the complex tear drainage system—collectively known as the nasolacrimal apparatus (NLA)—become blocked, infections can occur, leading to discomfort, tear staining and discharge from the eye, with subsequent skin inflammation. Now, thanks to advances in equipment, technique and teamwork, clinicians from UC Davis’ Ophthalmology, Internal Medicine, Soft Tissue Surgery, Anesthesia, and Diagnostic Imaging Services are having unprecedented success treating NLA blockages in multiple species.

With cameras now small enough to fit into the tiny drainage ducts, clinicians utilize endoscopy (as well as computed tomography and fluoroscopy) to identify and bypass or remove NLA obstructions. Whether the obstructions are caused by a partially scarred duct or a foreign body such as a foxtail, stents can be placed in the duct from eye to nose.

To date, UC Davis has treated 15 dogs, two cats and one horse with this pioneering procedure that now offers a minimally invasive alternative to referring veterinarians who have been faced with treating NLA obstructions using conventional (and often more invasive) methods. Referring ophthalmologists are recognizing UC Davis’ unique approach to effectively treat this condition.

One recipient of this groundbreaking work is Kinako, an 8-year-old cat, whose left eye continued to fill with large amounts of discharge, indicating a possible NLA blockage. After her veterinarian was unable to flush the duct, Kinako was referred to UC Davis where a stent was placed to clear the blockage.

UC Davis continues to evaluate this procedure in a clinical trial in hopes of determining if it will become the standard-of-care for an extremely frustrating disease complex. If you are interested in referring a patient to this study, please contact 530-752-EYES (3937).

Did You Know?

— that faculty and student scholars attended and lectured at the 2015 North American Veterinary Regenerative Medicine Conference? UC Davis is at the forefront of paving the road of this discipline by way or research and clinical trials, and presented cutting-edge and paradigm-changing lectures.

— that Dr. Melissa Bain has been appointed as director of Professional Student Clinical Education? This is a new position in the school and Dr. Bain will work with Dr. Jan Ilkiw, associate dean of Academic Programs, and the VMTH director to oversee all aspects of senior student training in their clinical year.

— that Dr. Linda Barter has been appointed as director of House Officer Affairs? This second new position will help to improve oversight of all aspects of house officer training in the VMTH.

— that October 11-17 was National Veterinary Technician Week? The hospital hosted a luncheon in honor of its technicians. Dr. Michael Lairmore, dean of the school, joined the staff for lunch to thank them for their crucial role in the excellent care we achieve for our patients.
UC Davis Veterinary Cardiologists
Implant Pacemaker to Save Dog

Rocket, a 10-year-old Boston terrier, was taken to his veterinarian after he appeared to hurt himself jumping on the bed. His veterinarian did notice some tightness in his neck, but, more importantly, noticed something else that was much more serious for Rocket. A dog’s normal heart rate is generally around 100, but Rocket’s had dipped to less than half of that. He was eventually referred to the heart specialists in the Cardiology Service for further evaluation of his extremely slow heart rate.

Dr. Josh Stern, chief of the Cardiology Service, diagnosed Rocket with a condition known as a complete or 3rd degree atrioventricular (AV) block, which stops the “pace-making” area of the heart from being able to communicate appropriately to the rest of the heart for a unified contraction. This “block” in communication causes the heart muscle to find alternate ways of beating on its own, but at a much slower rate. There are a few causes of 3rd degree AV block, but it is most commonly caused by an idiopathic fibrosis of the conduction area of the heart.

The slower beats sustaining Rocket are known as ventricular escape complexes. This, however, is not a long-term way for the heart to function, and studies have shown that dogs with 3rd degree AV block are at high risk of sudden death. Therefore, it was recommended that Rocket undergo the standard treatment for this condition – the placement of a permanent pacemaker to provide a normal heart rate again.

To ensure that Rocket was a good candidate for the pacemaker, Dr. Stern and his team performed a cardiac evaluation, consisting of multiple diagnostic tests. X-rays of his chest were taken and showed enlargement of the heart. Abdominal ultrasound showed a slightly enlarged liver and a small accumulation of fluid in the abdomen. These findings were consistent with a very mild right-sided congestive heart failure. When the heart is weaker, its ability to properly drain blood from the body is impaired, causing back-up of pressure in the vessel that travels to the heart from the abdomen. As this vessel distends, the increased pressure causes fluid to leak into the abdomen. This condition was likely secondary to Rocket’s 3rd degree AV block, and would resolve with the increased heart rate that the pacemaker generates.

Also performed were an electrocardiogram (which tested the electrical activity in Rocket’s heart) and an echocardiogram (an ultrasound of the heart which allowed for size and pressure measurements of Rocket’s heart chambers). Additionally, blood work (complete blood count, chemistry panel, heartworm test, tick-borne disease assessment) and urinalysis were performed to ensure that Rocket did not have any concurrent illness that would contraindicate the interventional surgery procedure.

All of Rocket’s tests were unremarkable, and Dr. Stern proceeded with pacemaker placement the following day. Rocket was placed under general anesthesia, and a transvenous, permanent pacemaker was placed without complication. An external battery attached to the pacemaker was secured under the skin and muscle of the right side of his neck. Rocket recovered for a night in the ICU where he was continually monitored and kept quiet with sedation to minimize movement.

UC Davis offers state-of-the-art pacemakers made especially for dogs. The battery lifespan for a brand new device is more than 10 years.

UC Davis Veterinary Cardiologists
Implant Pacemaker to Save Dog

A pacemaker was placed in Rocket to normalize his dangerously low heart rate.

UC Davis offers state-of-the-art pacemakers made especially for dogs. The battery lifespan for a brand new device is more than 10 years.
Behavior Specialists Help Aggressive Dog Get Along with Companion

When Stella, a 1-year-old Welsh terrier, began showing frequent and severe aggression toward her companion Guinness, another Welsh terrier, her owners brought her to see the behavior specialists at UC Davis. Stella was brought into the house when she was a puppy and Guinness was 2. Things went well between the two terriers for the first year, but soon after, especially during times of high arousal (such as when their family returned home, or around a favored toy), Stella would suddenly attack Guinness. Her attacks would include clamping down on Guinness’ neck, refusing to release even when her owners tried to pull her off.

After one particularly aggressive attack, Guinness had to be treated for puncture wounds. Their owners rightfully sought help with the Behavior Service. Based on an extensive history, video footage of the dogs in their home environment, and in-person interactions during their consultation, Stella was diagnosed with anxiety with multiple triggers, and offensive dominance-status aggression towards her housemate dog. Guinness was assessed as having normal canine behavior – he was simply a victim of Stella’s aggression.

While there are several possible underlying motivations, in Stella’s case it was determined that the dogs had an unstable hierarchy. Stella showed clear signs that she was the most dominant dog in the home, and Guinness usually backed down from her without complaint. The fights seemed to break out in situations when Stella perceived that Guinness was given preferential treatment by the owners.

Pet owners naturally want to give attention and resources equally due to humans’ sense of fairness and equality. However, when dogs live together in groups and need to share resources, they sometimes form stable hierarchies in which the most dominant dog gets preferential access to resources. Fairness and equality sometimes play no part in their natural world. While aggression is often involved in establishing the hierarchies, they eventually serve to reduce aggression, because each dog knows its place in the pecking order. It is important to recognize that these hierarchies only exist between dogs. The idea that dogs form dominance hierarchies with humans has been disproven.

To stabilize the hierarchy, Stella’s owners were asked to treat Stella preferentially when distributing resources. When they came home from work, they were to give Stella more attention than Guinness. If they were putting down food bowls, or handing out treats, Stella was to get served first. Stella was also started on a daily anti-anxiety medication to help with her excessively anxious reactions to various additional daily triggers.

Both dogs were also started on a reward-based leadership program. The program helped to improve Stella’s response to her owner’s cues and to build up her confidence. No physical or verbal forms of punishment are used in this program.

At their follow-up appointment one month later, Stella and Guinness made significant improvement. Both dogs enjoyed the frequent training, and Guinness did not seem to mind receiving resources second. Stella responded well to her medication and showed less frequent anxious responses to noises and outdoor triggers. Most importantly, her aggression toward Guinness was both less frequent and less severe.

At that stage in their treatment plan, desensitization and counter-conditioning training was introduced, with the goal being to teach Stella appropriate calm behavior in response to Guinness’ presence. Their owners set up structured interactions between the two dogs, and rewarded Stella for showing desirable behavior, while preventing them from becoming too aroused by adjusting the distance, intensity, and duration of the exposure.

In the six months since, Stella has continued to show steady improvement. She and Guinness now have a positive and mostly peaceful relationship. Because of this success, their owners have even been able to foster new dogs in their home.
Livestock Clinician Experiences All Aspects of Hospital

Since first arriving at the school more than 10 years ago, Dr. Bret McNabb, has experienced just about every aspect of life at the veterinary hospital. Starting as a first year student (and also a hospital technician while in school) in 2003, he has quickly escalated through the ranks, and was recently named to the faculty as assistant professor of Clinical Livestock Reproduction in the Department of Population Health and Reproduction.

Following graduation in 2007, Dr. McNabb worked for two years in a large animal practice in Montana before returning to UC Davis for a residency in food animal reproduction and herd health and a Master of Preventive Veterinary Medicine degree. Following the residency, he became board certified in the American College of Theriogenologists, and served as a staff veterinarian until the summer of 2015, when he was appointed to the faculty. Dr. McNabb has also served as chief of the Livestock Herd Health and Reproduction Service since 2013.

Dr. McNabb has made invaluable contributions to the development and implementation of the third year DVM curriculum, as well as the planning of fourth year clinical rotations. In addition, Dr. McNabb has provided training for livestock and theriogenology residents, and partnered with departmental colleagues in preparing residents for board examinations.

While leading the clinical side of the Livestock Herd Health and Reproduction Service, Dr. McNabb also appreciates passionate students who want to learn everything they can about livestock. That mix of clinical and teaching activities are his favorite parts of the job.

“The students ask questions about aspects of livestock medicine I haven’t thought of in years,” Dr. McNabb said. “It keeps things interesting, and keeps me on my toes.”