

Using change management and human behavior change principles to implement large scale animal welfare reform in a global research organization.

Authors: Sarah E. Thurston (1), Carly I. O'Malley (2), Judy Murray (3), Elizabeth A. Nunamaker (4)

Titles/Institutions: (1)Specialist, Animal Welfare and 3Rs Programs, Global Animal Welfare, Charles River; (2)3Rs Scientist, Global Animal Welfare, Charles River Laboratories; (3)Director, Animal Welfare Training, Global Animal Welfare, Charles River Laboratories; (4)Executive Director, Global Animal Welfare, Charles River Laboratories

Charles River set an internal goal in 2022 to transition away from aversive rodent tail handling to refined handling methods such as tunnel and cup handling by the end of 2025. To enable such a large-scale animal welfare change, extensive planning and strategizing was necessary. It was determined that two organizational change management strategies would be employed to facilitate this change: ADKAR (Awareness, Desire, Knowledge, Ability, Reinforcement) and the Results Pyramid. These strategies provided us with a structural framework to allow the organization to move through the change in a stepwise and ordered approach. To ensure permanence, we also focused on human behavior change through a series of longitudinal surveys. The surveys assessed employee's knowledge and attitudes towards refined handling at the beginning of the transition (2022), towards the middle (2023), and near the end (2025). This allowed flexibility in our change management approach as needed to align with employees' views and needs. According to survey results, in 2022, 81% of sites tail handled mice. For rats, in 2022, body handling was the primary method of handling, but tail handling was common for young adult and grumpy, older, less handled rats. By 2025, refined handling methods were the primary handling method for all groups of mice and rats. People never or rarely being bitten increased from 52% to 68% in mice, and from 59% to 90% in rats from 2022 to 2025. The main challenges of implementing refined handling for both mice and rats were muscle memory (55% mice; 67% rats) and time (61% mice; 49% rats). Through the various change management and human behavior change efforts, our organization is now entirely transitioned to refined handling for rodents. This approach can be successfully utilized to implement refined handling or other significant animal welfare reforms in large global research organizations.

When Model-Based Expectations Mask Pathology: Cerebral Abscessation in a Fontan Sheep

Authors: Lowder, Natalie J.¹, Walker, Mary M.¹

Titles/Institutions: ¹ Animal Resources Core, Abigail Wexner Research Institute, Nationwide Children's Hospital, Columbus, OH, United States

Large animal surgical models may require serial anesthesia and invasive monitoring, increasing cumulative risk for procedural complications, including infection. This report describes a cerebral abscess in an ovine Fontan model following multiple anesthetic events. Gigi, a Suffolk/Dorset born in December 2022, underwent carotid telemetry implantation at 3 months of age followed by Fontan surgery in early 2023. The Fontan procedure is a palliative surgical approach for single ventricle congenital heart disease that routes systemic venous return directly to the pulmonary arteries, bypassing the heart. Fontan physiology has been associated with neurologic sequelae related to altered cerebral perfusion, venous congestion, or thromboembolic risk, which may manifest as altered mentation, ataxia, or seizure activity. Both surgical recoveries were unremarkable. As part of a protocol evaluating the systemic effects of Fontan physiology, Gigi underwent multiple subsequent anesthetic events for fluoroscopy and MRI, along with serial blood collections. In January 2024, she developed transient decreased responsiveness, ataxia, hindlimb weakness, and horizontal nystagmus. Clinicopathologic findings, thoracic and abdominal radiographs, and blood gas analysis were unremarkable. Neurologic signs were initially intermittent over several days with performance factors maintained, but Gigi eventually developed head pressing, circling, and cluster seizures refractory to midazolam and phenobarbital. Due to worsening neurologic status, humane endpoint was reached. While hypoxic–ischemic brain injury and progressive neurocognitive impairment are well characterized in human Fontan patients, necropsy in this case revealed a 6cm × 3cm cerebral abscess within the left parietal lobe, presumed secondary to an insidious hematogenous infection acquired perioperatively. This case illustrates the diagnostic challenge of distinguishing expected Fontan associated neurologic sequelae from incidental pathology in large animal research models. Experimental timelines must balance data collection needs and inherent risks of anesthetic events, which should be minimized as possible to reduce cumulative infection risk of repeated catheter placements, intubation attempts, and overall anesthetic exposure.

Novel Approaches to Social Housing and Enrichment to Improve Welfare for Rabbits, Guinea Pigs, and Mice at Labcorp

Author: Sarah Burtner, RVT

Institution/title: Study Coordinator, Labcorp

Male mice and rabbits traditionally have not been social housed at Labcorp due to conspecific aggression. Guinea pigs, although successfully social housed, tended to outgrow the standard caging that was readily available, which would preclude social housing due to floor space. The Animal Care and Training teams worked collaboratively to come up with various combinations of ideas to improve the welfare of these three cohorts of animals. For male mice, we used larger rat caging, more enrichment, and dual access to water fixtures and feeders. For rabbits, males were paired with females (once they were neutered) and additional enrichment was added, including human interaction outside their cage environment. For guinea pigs, we utilized older style rabbit cages with tunnels for improved floor space, and modified the flooring using a recycled polycarb sheet to mimic a solid bottom caging with bedding. Improvements were incremental, but overall, we found a balanced approach. For male mice, we observed far less flooding and wet cages, animals were less aggressive, and we used far fewer cages due to social housing. Male mice commingling worked better with litter mates or before sexual maturity, but it still worked as long as there was group housing (3-5/cage) and not pair housing, and multiple points of access to both water and food. For male and female cohabitating rabbits, they were far less skittish, more likely to come to the front of the cage, and more of a "willing partner" when interacting with animal handlers. In addition, human interaction was a "win/win" for animals and technicians from a compassion satisfaction perspective. For guinea pigs, the recycled rabbit caging with tunnel allowed us to keep the animals social housed, and we also saw an increase in activity levels in the form of guinea pig "popcorning" that we feel can be ascribed to the additional floor space that was provided. In conclusion, the interactions of the two teams with the animals, and the continuous idea sharing from all staff members allowed the program to truly blossom and benefit the welfare of these three species at Labcorp. The combinations of non-standard housing, novel enrichment, and human interaction made these efforts successful.

Brush the Stress Away and Light the Way to a Happier Life: The Effects of Light Color and Paint on Nonhuman Primate Behavior

Authors: Arlene Gross (1), Crystal Markiewicz (1), Ryan McCrory (1), Madison Deffinger (1), Shelby Early (1), Jennifer Thompson (1), Genevieve Andrews-Kelly (1) and Akhil Sebastian Thazhathuvarikkayil (2)

Institutions: (1) Labcorp, Greenfield, IN, US, (2) Labcorp, Bangalore, India

In our industry, we are always searching for novel ways to reduce or prevent stereotypic behaviors and to increase normal species-specific behaviors. Abnormal behaviors can be linked to anxiety or stress which negatively affects the animal and study data. Human studies have shown that specific room color and art can positively affect mood and potentially help reduce stress and anxiety. As soon as the idea was approved by IACUC, we created a three-phase study to test if this would similarly affect our primates. An ethogram was created to score normal and abnormal behaviors while providing window paintings and lighting effects. Behavior was monitored prior to any environmental changes for a baseline, during each enrichment phase, and during a “washout” period between each phase. Blue and green polyvinyl chloride light covers were used to filter the lighting in the room and murals were created using washable paint applied to two-way mirror windows. Established social groups exhibiting normal and abnormal behaviors were selected. All routine enrichment and room activity was maintained during all study phases with the only change being the color of lighting used or the paint application to the windows. Testing was performed to ensure that the necessary level of light was maintained within the room. The room was kept at ~30-foot candles of light while the light covers were in use to allow maximum amount of color impact without compromising the required amount of light for the animals. All behaviors and amount of time each was demonstrated were recorded during observations. There were noticeable differences in the amount of time animals spent on various behaviors during each study phase versus the baseline timeframe. Decreased abnormal behaviors and increased species-specific behaviors were seen for animals during times the environmental enrichment was provided. The results show that these simple environmental enrichments could be a low cost and non-invasive way to improve animal welfare and encourage positive behavior.

The effect on behavior of rabbits during oral gavage dosing with pre-dipped catheter

Author: Logan Henz

Institution/Title: Labcorp

Rabbit oral gavage is a highly skilled technique that may produce high levels of stress in the rabbit. This study seeks a refinement solution to make the oral gavage process more efficient for the technicians, while placing priority on animal welfare. In the last ~4 years Labcorp Greenfield has worked to enhance animal welfare and the wellbeing of the technicians by utilizing the Lomir © Rabbit Snuggle during gavage restraint. This not only provides technicians ergonomic benefits, decreasing the number of hand injuries, but also aids in reducing stress of the animal during oral gavage. Although the Snuggle helps keep the animal calm, there is still the risk of gavage related trauma to the animal. Per Hoggat et al (2010) dipping the dosing mechanism in sucrose water made the dosing process more favorable to the mice. This study takes that process and applies it to rabbit oral gavage. Four groups were tested with different liquids for the pre-dose tube dip procedure: water, apple juice, sucrose water, and carrot juice. These dips were chosen based on PH levels as well as which one the rabbits favored as a treat. The animals' behavior was scored in four categories: 1. Animal behavior while being placed in the restraint device. 2. Ease of tube placement 3. Behavior during tube placement. 4. Behavior once returned to home cage. After 10-days of gavaging and scoring based on the four categories, the data suggests that the rabbits favored sucrose water more than the other dips used.

Comparing Topical Treatment Outcomes in Mice with Idiopathic Ulcerative Dermatitis

Authors: Kristin L. Fox¹, Amelia R. Hall¹, Bonnie R. Newcomb¹, Taylour Mims¹, Nichole J. Caudill¹, Haley Gribbins¹, Mark A. Suckow, DVM, DACLAM², Stasia A. Bembenek-Bailey, DVM, PhD¹

Institutions/Titles: ¹ Division of Laboratory Animal Resources, University of Kentucky, Lexington, KY, USA

² Department of Biomedical Engineering, University of Kentucky, Lexington, KY, USA

Idiopathic ulcerative dermatitis is a persistent concern in laboratory mice that negatively affects animal welfare and research validity. Current treatments are frequently ineffective, underscoring the need for alternative management strategies. This study aimed to compare the effectiveness of several commercially available topical therapies for naturally occurring ulcerative dermatitis, chosen for ease of application and minimal disruption to ongoing research. A total of 69 mice were enrolled. All animals received an initial rear toenail trim and standard enrichment of a nestlet, along with a small handful of shredded paper bedding. Mice were randomly assigned to a control group or treatment with 10% gabapentin gel, an anhydrous transdermal base, 0.15% hexylresorcinol gel, or 1% silver sulfadiazine mixed in a 1:1 ratio with 2% lidocaine. Treatments were applied daily, excluding weekends and holidays, until lesion resolution or for a maximum of 28 days. Lesions were assessed by blinded observers three times weekly and scored using a published severity scale. Lesion severity and resolution rates were summarized as mean percentages for each group; recurrent lesions prompted reinstatement of the assigned treatment. Only hexylresorcinol demonstrated a modest benefit compared with toenail trim alone. Comparison of mean improvement between the control and hexylresorcinol groups using two-tailed t-tests (equal and unequal variance; $df = 19$) yielded p values of 0.15 to 0.20. Mice receiving nail trim alone had the fewest unresolved lesions but the highest recurrence rate, whereas gabapentin and silver sulfadiazine/lidocaine groups showed no recurrence despite lower overall improvement. Although limited by small sample sizes and recurrence being a secondary outcome, these findings highlight the complex nature of ulcerative dermatitis and emphasize the importance of evaluating the desired clinical outcome with therapeutic options. Further studies are warranted to assess the effect of weekly nail trims, a combination of weekly nail trims and topical treatment, and these treatments with enhanced/rotating enrichment on improvement and recurrence of ulcerative dermatitis lesions.

Utilization of broth-infused gauze wipes for canine oral gavage dosing

Authors: Samantha Stanley, RALAT, Gracie Massie

Institution: Labcorp Early Development Laboratories Inc., Greenfield, IN, USA

Dose administration via oral gavage, while common in laboratory animal research, requires well-trained and careful technicians to maintain animal health, welfare, and data integrity. An animal struggling during dose administration can cause many complications, including increased stress for animals and technical staff, increased indices of behavior-based observations, and the risk of a dosing-related error. This can compromise research data, as it can be difficult to distinguish a transient adverse reaction or observation versus the stress stemming from repetitive restraint and procedures. Typically, during oral gavage-dosing, a gauze square that has been submerged in water and wrung out is used to wipe the gavage tube prior to placement. We propose a slight alteration to this process by utilizing broth-infused gauze wipes (one/animal) during dose administration to help alleviate the stress caused by the procedure while also rewarding the animals with a sapid treat. We noted in a 40-dog oral gavage study and a BID 32-dog oral gavage study, both over a course of 28 days, that the introduction of broth wipes caused a moderate decrease in clinical observations relating to dosing. Utilizing data from these two internal studies, we can conclude that the introduction of broth wipes during oral gavage procedures can moderately reduce clinical observations including vocalizations during gavage tube placement and the number of animals struggling during dose administration. This stand-alone study will support this theory by using a behavioral scoring system to determine the positive and/or adverse effects of using broth wipes for canine gavage, in addition to any significant differences in the flavors of broth used.

Water Pouch Water Sterility: A Ten Year Study

Authors: B. Skiles¹, D. Hickman², N. Johnston¹

Institutions/Titles: ¹Indiana University School of Medicine, ² AAALAC International

The in-house produced, commercially available water pouch system provides ultra-filtered, chlorinated sterile water to our rodent population. We wanted to perform testing to determine the possible shelf life of these water pouches. Pouches were produced in October 2015 using a dilute chlorine solution added to ultra-filtered water. Pouches were saved in standard storage containers in a typical storage room environment. We swabbed pouches at regular intervals for ten years. We used a commercially available ATP detection system to swab the inside surface of the pouch and water. The data demonstrates that in-house made water pouches remain sterile for at least 10 years

Optimizing Recognition of Pregnant Mice in Research Settings

Author: Carol Dowell, BS, RVT, RLATG

Institution/Title: Training Coordinator, Purdue University Office of Research

Pregnant mice are often difficult to recognize yet are widely used in biomedical research, particularly in studies involving genetics, reproduction, and fetal development. Failure to identify pregnancy can lead to inadequate housing conditions and overlooked pregnancy-related complications, negatively impacting maternal and fetal health and increasing variability in research outcomes. Ensuring optimal care for pregnant mice is essential for both ethical considerations and data integrity. This poster is designed to aid in recognizing signs of pregnancy in mice using visual references.