

Data & Surgical Services: Successful Collaborations Drive Efficiency

The veterinary staff at the U.S. Army Medical Research Institute of Chemical Defense (USAMRICD) initiated a research study to primarily investigate the performance of the DSI PhysioTel™ Digital System for animal welfare compliance and secondarily assess a compound's effect on animals by evaluating changes in physiologic parameters.

THE CHALLENGE. Advances in preclinical physiologic monitoring systems provide challenges for many researchers. The challenges faced by USAMRICD included limited knowledge of and experience with:

- cardiovascular & neurophysiology
- telemetry technology
- surgical implantation techniques
- data analysis and interpretation of the findings

They also had limited time to produce accurate summations for presentation of the results to the research community. The successful acquisition of physiologic data and interpretation of the results were at risk without strong collaboration between the research institute and DSI's Scientific Services team.

THE SOLUTION. USAMRICD commissioned DSI to install and setup the technology, and execute the research study.

- DSI's surgical services team implanted four female rhesus macaques with PhysioTel Digital L21 devices. All animals were implanted with systemic blood pressure and left ventricular pressure catheters. Two out of the four animals were implanted with leads to record electrocardiograms (ECG), while the other two were implanted with leads to record electroencephalograms (EEG). Continuous data were collected from November through March.
- DSI's data analysis services team evaluated and summarized five months of continuous data to compare the different social housing environments and effects on physiologic parameters such as blood pressure, left ventricular pressure, ECG, EEG and temperature following the administration of physostigmine.

THE OUTCOME. Researchers at USAMRICD recognized that successful execution of their study required knowledge of cardiovascular physiology, neuroscience, and telemetry technology. DSI saved USAMRICD over eighty man-hours by providing the following services:

- Surgical implantation of four PhysioTel Digital devices in rhesus macaques
- Data analysis expertise to interpret and summarize all results and generate accurate reports
- Collaboration to create a poster presented at AALAS and APV annual meetings

This case study demonstrates a successful collaboration between a research institution and DSI Scientific Services, resulting in timely study execution, interpretation of results, and presentation of results to the research community.