

USDA Annual Report: E Study Animals
Fiscal year 10/1/2021 – 9/30/2022

One pig underwent a category E study.

The protocol involves spinal cord injury causing hindlimb paralysis to simulate the effects of spinal cord injury in humans. The protocol is designed to investigate the effectiveness of a new stem cell technology for improving outcomes after spinal cord injury.

First the injury surgery is performed during which Buprenorphine 0.01-0.05 mg/kg is provided preemptively, and then as needed every 6 hours until the animal is comfortable. Members of the laboratory team provide frequent support and ensure the animal can feed and change positions appropriately. A short, 48-hour, post op period is used to simulate the period of time needed to produce the scarring, fibrosis, and cavity formation expected in humans. After the 48-hour period, a non-survival procedure is performed to include the stem cell treatment and MRI monitoring, all performed under anesthesia. The animals are classified as category E due to the potential for distress from hindlimb paralysis during the 48-hour post op period.

Sixteen piglets underwent a category E study.

Necrotizing enterocolitis (NEC) is the leading cause of death in premature infants. The disease occurs suddenly and is characterized by the acute development of intestinal necrosis and systemic sepsis that rapidly leads to multisystem organ failure and death. Discovering new treatment or relevant therapies, such as dietary manipulations, for NEC is a significant benefit to society, given the increasing numbers of premature infants born each year.

Experimental NEC is induced by gavage feeding of 120ml/kg of NEC formula. Feedings start at 7:00a.m., and continue every 3 hours, until 10:00p.m., for a total of 6 feeds per day. This lasts up to five days, at which time they are euthanized. The piglets are carefully monitored throughout the feeding period for the development of the NEC. Piglets that appear to be diminishing clinically are euthanized. However, sometimes they can quickly decompensate without severe premonitory signs, and for this reason they are listed as category E.