

9.2 A. Circumcision Pain

You have heard that newborn rodents exposed to pain have long-term alterations in pain perception, and you are wondering whether the same thing happens in human newborns. You have access to measurements of apparent newborn pain obtained as part of a randomized trial of anesthesia for newborn boys undergoing circumcision. (The pain measurements are things like change in heart rate, intensity and duration of crying, levels of stress hormones, etc.) The study found far fewer signs of pain in those randomized to anesthesia for their circumcision than in the controls (who got nothing-ouch!). These same infants, as well as uncircumcised boys from the same hospital are now to be videotaped as they receive their 4- and 6-month vaccinations; apparent pain from the injection will be rated by observers of the video recordings who will be blinded to perinatal events.

You plan to study the duration and intensity of crying after immunizations -- this will be your outcome variable. What *predictor* variable would give you the greatest strength of causal inference to address the question of whether perinatal pain in newborns *causes* an increase in future pain perceptions? Explain.

1. Stang HJ, Snellman LW. Circumcision practice patterns in the United States. *Pediatrics*. 1998;101(6):E5.
2. Taddio A, Katz J, Ilersich AL, Koren G. Effect of neonatal circumcision on pain response during subsequent routine vaccination. *Lancet*. 1997;349(9052):599-603.