

Pain assessment postoperatively should be performed in a systematic fashion to determine if swine require the administration of systemic analgesics. Postoperative monitoring involves making the following observations:

- 🌀 Condition of incision
- 🌀 Attitude/Behavior
- 🌀 Temperature/Pulse/Respiration (TPR)
- 🌀 Feces
- 🌀 Urine
- 🌀 Appetite
- 🌀 Water consumption
- 🌀 Pain score

The pain score that we utilize is modified from the American College of Anesthesiologists:

Pain Assessment:

Use the following number designations, as appropriate, to reference no pain perception or reaction as if painful.

Level of Pain	Description
1	Deep palpation of the surgical site and immediate surrounding tissue does not provoke a response. (Remember that freshly opened tissue is susceptible to infection and palpation should be done with a gloved hand).
2	Deep palpation of the surgical site and immediate surrounding tissue provokes a response but a similar response can be seen on the contra-lateral side or limb, suggesting a hyperesthetic and/or hyperreflexive state.
3	Deep palpation of the surgical site and immediate surrounding tissue that provokes a response much greater than a similar stimulus on a non-surgical part of the body. Probably indicative of some pain and appropriate analgesic should be administered.
4	Deep palpation of the surgical site and immediate surrounding tissue that provokes a response much greater than a similar stimulus on a non-surgical part of the body and accompanied by vocalization in an otherwise quiet patient. Requires analgesia.

Table 1. Pain Assessment Levels

Chronic pain and distress is more dependent upon the clinical observations rather than the pain score. The treatment of those conditions may also require the use of sedatives or other mood altering drugs. Clinical judgment should be used to determine the necessity of administering drugs, rather than a preset protocol. Administration of analgesics when they are not necessary is harmful.

Clinical observations that may be helpful in determining whether a pig is in pain or distress may include:

Decreased appetite and/or water consumption

- 🌀 Vocalization and avoidance or aggressive behavior
- 🌀 Hyperactivity and/or restless and nervous behavior
- 🌀 Listless behavior and failure to rise when people approach the pen
- 🌀 Self mutilation or persistent rubbing or licking
- 🌀 Altered gait or abnormal posture
- 🌀 Changes in skin texture or appearance

Two other manuscripts on this website are complimentary to this one: Anesthesia and Analgesia in Swine; Perioperative Care of Swine. The reader is referred to those documents for more complete information on the control of pain and distress. A sample chart for postoperative monitoring is provided on page 2.

Reference

Swindle MM: *Swine in the Laboratory: Surgery, Anesthesia, Imaging and Experimental Techniques, 2nd Ed.*, Boca Raton, FL: CRC Press, 2007.

Sample Chart

Post-Operative Observations for Swine

Please check the following daily for each animal that has undergone surgery or an invasive procedure. Space is available for 7 days of observations. Use Progress Note form for observations beyond 7 days. (N = normal, TPR=temperature, pulse, respiration)

Species _____ Procedure _____ Protocol # _____
Animal # _____ Date of Procedure _____ PI _____

Day 1	Incision		Urine		TPR	
	Attitude		Eating		Pain score	
	Feces		Drinking		Initials/Time	
Day 2	Incision		Urine		TPR	
	Attitude		Eating		Pain score	
	Feces		Drinking		Initials/Time	
Day 3	Incision		Urine		TPR	
	Attitude		Eating		Pain score	
	Feces		Drinking		Initials/Time	
Day 4	Incision		Urine		TPR	
	Attitude		Eating		Pain score	
	Feces		Drinking		Initials/Time	
Day 5	Incision		Urine		TPR	
	Attitude		Eating		Pain score	
	Feces		Drinking		Initials/Time	
Day 6	Incision		Urine		TPR	
	Attitude		Eating		Pain score	
	Feces		Drinking		Initials/Time	
Day 7	Incision		Urine		TPR	
	Attitude		Eating		Pain score	
	Feces		Drinking		Initials/Time	

Table 2. Post-Operative Observations for Swine



Technical Bulletin

Pain Assessment in Swine

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Agent	Dosage	Indication
Aminophylline	5.0 mg/kg iv	Produce bronchodilation
Amiodarone	10.0-12.0 mg/kg followed by 0.05-5 mg/kg/hr iv	Antiarrhythmic
Atropine	0.02 – 0.05 mg/kg iv	Counteract bradycardia, heart block
Bicarbonate Na	1.0 mEq/kg bolus followed by 0.5-1.0 mEq/kg/hr	Counteract acidosis
Bretylium	3.0-5.0 mg/kg iv	Antiarrhythmic
Calcium Chloride	5.0-7.0 mg/kg slow iv infusion	Increase contractility
Digoxin	0.01-0.04 mg/kg iv	Counteract supraventricular arrhythmias, decrease conduction, increase contractility
Dopamine	2.0-20.0 ug/kg/min iv	Counteract hypotension, cardiogenic shock
Dobutamine	2.5-10.0 ug/kg/min iv	Counteract hypotension, cardiogenic shock
Epinephrine	0.5-2.0 ml of 1:10,000 solution iv or ic (30 ug/kg)	Counteract asystole, decreased contractility
Isoproterenol	0.01 ug/kg/min iv	Induce bronchodilation, Counteract AV block, sinus bradycardia
Lidocaine	2.0-4.0 mg/kg bolus followed by 50 ug/kg/min iv	Antiarrhythmic, antiectopic
Nitroprusside Na	0.5-0.8 ug/kg/min iv	Reduce hypertension
Neosynepherine	0.5-1.0 mg/kg iv	Increase blood pressure by vasoconstriction
Propranolol	0.04-0.06 mg/kg iv	Counteract tachycardia

Table 1. Cardiopulmonary Emergency Drugs