**Anesthetic Considerations**

The anesthetic management of animals with abdominal disease depends on the underlying disease. Animals that are not in shock can be premedicated with a benzodiazepine and opioid and induced with propofol, ketamine, or etomidate given intravenously to effect ([Table 19-1](https://www.inkling.com/read/fossum-small-animal-surgery-4th/chapter-19/chapter19-reader-0#5093696d225e4b319e73ecfa7eebae51)). [Table 19-2](https://www.inkling.com/read/fossum-small-animal-surgery-4th/chapter-19/chapter19-reader-0#b561cd3df9bb4d69b480e4057c92224d) provides suggested anesthetic protocols for animals that are in shock or that are debilitated.

**TABLE** **19-1** Anesthetic Considerations in the Stable Patient Undergoing Abdominal Surgery

|  |
| --- |
| **Preoperative Considerations** |
| Associated conditions | 1. **•**

Minimal; usually healthy |
| Blood work | 1. **•**

HCT1. **•**

TP1. **•**

In patients older than 5-7 yr, consider electrolytes, liver enzymes, BUN, and Cr |
| Physical examination | 1. **•**

May be painful if incarcerated hernia |
| Premedications | 1. **•**

If patient is anxious, give the following:* 1. **⋄**

Diazepam (0.2 mg/kg, IV), ***or**** 1. **⋄**

Midazolam (0.2 mg/kg IV, IM), ***plus**** 1. **⋄**

Hydromorphone\* (0.1-0.2 mg/kg IV, IM in dogs; 0.05-0.1 mg/kg IV, IM in cats), ***or**** 1. **⋄**

Morphine (0.1-0.2 mg/kg IV or 0.2-0.4 mg/kg IM), ***or**** 1. **⋄**

Buprenorphine† (0.005-0.02 mg/kg IV, IM) |
| **Intraoperative Considerations** |
| Induction | 1. **•**

If premedicated, give:* 1. **⋄**

Propofol (2-4 mg/kg IV)1. **•**

If no premeds given, then:* 1. **⋄**

Propofol (4-8 mg/kg IV), ***or**** 1. **⋄**

Ketamine (5.5 mg/kg IV) with diazepam (0.28 mg/kg IV), ***or**** 1. **⋄**

Dexmedetomidine‡ (33 µg/kg IM, plus butorphanol (0.66 mg/kg IM), plus ketamine (6.6 mg/kg IM); use one half of all doses if given IV |
| Maintenance | 1. **•**

Isoflurane or sevoflurane, ***plus**** 1. **⋄**

Fentanyl (2-10 µg/kg IV PRN in dogs; 1-4 µg/kg IV PRN in cats) for short-term pain relief, ***plus**** 1. **⋄**

Hydromorphone\* (0.1-0.2 mg/kg IV PRN in dogs; 0.05-0.1 mg/kg IV PRN in cats), ***or**** 1. **⋄**

Morphine (0.1-1 mg/kg IV PRN in dogs; 0.05-0.2 mg/kg IV PRN in cats), ***or**** 1. **⋄**

Buprenoprhine† (0.005-0.02 mg/kg IV PRN), ***plus**** 1. **⋄**

Dexmedetomidine‡ (low-dose) (0.5-1 µg/kg IV), ***or**** 1. **⋄**

Medetomidine‡ (low-dose) (1-2 µg/kg IV), ***plus**** 1. **⋄**

Ketamine (low-dose) (0.5-1 mg/kg IV), ***or**** 1. **⋄**

Ketamine CRI (0.5 mg/kg IV loading dose, then 10 µg/kg/min IV) |
| Fluid needs | 1. **•**

5-10 ml/kg/hr plus 3× EBL |
| Monitoring | 1. **•**

Blood pressure1. **•**

HR1. **•**

ECG1. **•**

Respiratory rate1. **•**

SpO21. **•**

Temperature |
| Blocks | Epidural:1. **•**

Morphine (0.1mg/kg preservative free) ***or***1. **•**

Buprenorphine (0.003-0.005 mg/kg diluted in saline)Incisional:1. **•**

Lidocaine (<5 mg/kg in dogs; 2-4 mg/kg in cats), ***or***1. **•**

Bupivicaine (<2 mg/kg) |
| **Postoperative Considerations** |
| Analgesia | 1. **•**

Fentanyl CRI (1-10 µg/kg IV loading dose then 2-20 µg/kg/hr IV),***or***1. **•**

Hydromorphone CRI (0.025-0.1µg/kg/hr IV in dogs), ***or***1. **•**

Morphine (0.1-1 mg/kg IV or 0.1-2 mg/kg IM q1-4hr in dogs; 0.05-0.2 mg/kg IV or 0.1-0.5 mg/kg IM q1-4hr in cats), ***or***1. **•**

Buprenorphine† (0.005-0.02 mg/kg IV, IM q4-8hr), ***or***1. **•**

Hydromorphone\* (0.1-0.2 mg/kg IV, IM q3-4hr in dogs; 0.05-0.1 mg/kg IV, IM q3-4hr in cats), ***plus***1. **•**

+/− Ketamine CRI (2 µg/kg/min IV. If no previous loading dose, give 0.5 mg/kg IV prior to CRI), ***plus***1. **•**

In dogs:* 1. **⋄**

Carprofen (2.2 mg/kg q12hr PO), ***or**** 1. **⋄**

Deracoxib (3-4 mg/kg q24hr for <7 days PO), ***or**** 1. **⋄**

Meloxicam (0.1-0.2 mg/kg SC, PO, once then 0.1 mg/kg PO q24hr)1. **•**

In cats:* 1. **⋄**

Meloxicam§ (0.05-0.1 mg/kg PO or SC once), ***or**** 1. **⋄**

Buprenorphine† (0.01-0.02 mg/kg OTM q6-12hr) |
| Monitoring | 1. **•**

SpO21. **•**

Blood pressure1. **•**

HR1. **•**

Respiratory rate1. **•**

Temperature |
| Blood work | HCT and TP if large blood loss |
| Estimated pain score | Can be severe depending on source of pain and/or procedure. Some of these patients have been in chronic pain. |
| *BUN,* Blood urea nitrogen; *Cr,* creatinine; *CRI,* constant rate infusion; *EBL,* estimated blood loss; *HCT,* hematocrit; *HR,* heart rate; *SpO2,* oxygen saturation via a pulse oximeter; *TP,*total protein; *PRN*, as needed; *OTM*, oral transmucossal. |

**TABLE** **19-2** Anesthetic Considerations in the Septic Patient

|  |
| --- |
| **Preoperative Considerations** |
| Associated conditions | 1. **•**

Dehydration1. **•**

Electrolyte abnormalities1. **•**

Hypotension1. **•**

Abnormal blood glucose1. **•**

Anemia1. **•**

Adrenal suppression may be present in the critically ill patient |
| Blood work | 1. **•**

HCT1. **•**

Electrolytes1. **•**

BUN1. **•**

Cr1. **•**

TP1. **•**

Lactate1. **•**

Blood glucose, often serial glucose checks1. **•**

Urinalysis |
| Physical examination | 1. **•**

Often a younger patient that was previously healthy1. **•**

May be dehydrated, tachycardic or bradycardic, hypotensive, vomiting, and/or hypothermic1. **•**

Painful abdomen may be present |
| Other diagnostics | 1. **•**

Blood pressure1. **•**

ECG |
| Premedications | 1. **•**

Rehydrate over 4-6 hours if possible; if emergent, may have to give more rapid boluses to expedite time to surgery.1. **•**

Correct electrolyte and glucose abnormalities.1. **•**

Avoid sedatives in depressed patients1. **•**

Avoid alpha 2 agonists and acepromazine.1. **•**

If patient is anxious, give the following:* 1. **⋄**

Midazolam (0.1-0.2 mg/kg IV, IM) ***or**** 1. **⋄**

Diazepam (0.1-0.2 mg/kg IV)1. **•**

If patient is not depressed, then give the following:* 1. **⋄**

Hydromorphone\* (0.1-0.2 mg/kg IV, IM in dogs; 0.05-0.1 mg/kg IV, IM in cats), ***or**** 1. **⋄**

Morphine (0.1-0.2 mg/kg IV or 0.2-0.4 mg/kg IM) ***or**** 1. **⋄**

Buprenorphine† (0.005-0.02 mg/kg IV, IM) |
| **Intraoperative Considerations** |
| Induction | 1. **•**

If dehydrated, give the following:* 1. **⋄**

Etomidate (0.5-1.5 mg/kg IV); if possible, avoid its use in critically ill patients, ***or**** 1. **⋄**

Propofol (1-4 mg/kg IV slowly), ***or***1. **•**

If hydrated, give the following:* 1. **⋄**

Propofol (2-4 mg/kg IV if sedated or 4-8 mg/kg IV if unsedated) |
| Maintenance | 1. **•**

Isoflurane or sevoflurane, ***plus**** 1. **⋄**

Fentanyl (2-10 µg/kg IV PRN in dogs; 1-4 µg/kg IV PRN in cats) for short-term pain relief, ***plus**** 1. **⋄**

Fentanyl CRI (1-5 µg/kg IV loading dose, then 2-30 µg/kg/hr IV), ***or**** 1. **⋄**

Hydromorphone\* (0.1-0.2 mg/kg IV PRN in dogs; 0.05-0.1 mg/kg IV PRN in cats), ***or**** 1. **⋄**

Buprenorphine† (0.005-0.02 mg/kg IV PRN), ***plus*** PRN* 1. **⋄**

Ketamine (low-dose) (0.5-1 mg/kg IV), ***or**** 1. **⋄**

Ketamine CRI (0.5 mg/kg IV loading dose, then 10 µg/kg/min IV)1. **•**

For hypotension (to keep MAP 60-80 mm Hg), give phenylephrine, ephedrine, norepinephrine, or dopamine as needed |
| Fluid needs | 1. **•**

10 ml/kg/hr if minimal EBL and minimal evaporative losses, or 10-20 ml/kg/hr if open abdomen with higher evaporative losses, plus 3× EBL. Higher rates of fluids are necessary if dehydration not corrected preoperatively1. **•**

Consider colloids if persistent hypotension |
| Monitoring | 1. **•**

Blood pressure1. **•**

ECG1. **•**

Respiratory rate1. **•**

SpO21. **•**

EtCO21. **•**

Temperature1. **•**

U/O |
| Blocks | Epidural:1. **•**

Morphine (0.1 mg/kg preservative free) ***or***1. **•**

Buprenorphine (0.003-0.005 mg/kg diluted in saline)1. **•**

Avoid local anesthetics for spinals and epidurals in hypotensive patients.Incisional:1. **•**

Lidocaine (< 5 mg/kg in dogs; 2-4 mg/kg in cats), ***or***1. **•**

Bupivicaine (< 2 mg/kg) |
| **Postoperative Considerations** |
| Analgesia | 1. **•**

Fentanyl CRI (1-10 µg/kg IV loading dose, then 2-20 µg/kg/hr IV),***or***1. **•**

Morphine (0.1-1 mg/kg IV or 0.1-2 mg/kg IM q1-4hr in dogs; 0.05-0.2 mg/kg IV or 0.1-0.5 mg/kg IM q1-4hr in cats) if not hypotensive, ***or***1. **•**

Hydromorphone\* (0.1-0.2 mg/kg IV, IM q3-4hr in dogs; 0.05-0.1 mg/kg IV, IM q3-4hr in cats) ***or***1. **•**

Hydromorphone CRI (0.025-0.1 mg/kg/hr IV in dogs), ***or***1. **•**

Buprenorphine† (0.005-0.02 mg/kg IV, IM q4-8hr; 0.01-0.02 mg/kg OTM q6-12hr in cats), ***plus***1. **•**

±Ketamine CRI (2 µg/kg/min IV. If no previous loading dose, give 0.5 mg/kg IV prior to CRI)1. **•**

Avoid NSAIDs in hypotensive patients. |
| Monitoring | 1. **•**

SpO21. **•**

Blood pressure1. **•**

HR1. **•**

Respiratory rate1. **•**

Temperature1. **•**

U/O1. **•**

ECG if electrolyte abnormalities |
| Blood work | 1. **•**

HCT if significant blood loss1. **•**

Repeat abnormal preoperative blood work1. **•**

Serial blood glucose checks if necessary |
| Estimated pain score | Moderate to severe if open abdominal surgery or if underlying pancreatitis |
| *BUN,* Blood urea nitrogen; *Cr,* creatinine; *CRI,* constant rate infusion; *EBL,* estimated blood loss; *ECG,* electrocardiogram; *EtCO2,* end-tidal CO2; *HCT,* hematocrit; *HR,* heart rate; *MAP,*mean arterial pressure; *SpO2,* oxygen saturation via a pulse oximeter; *TP,* total protein;*U/O,* urine output; PRN, as needed; OTM, oral transmucosal. |