Surgery and Anesthetic Logs—Monitoring and Recording During Pre-Surgical, Anesthetic, Surgical and Post-Surgical Periods

A veterinary surgery log is a cumulative record of all surgeries performed at a veterinary site. An anesthetic log (or form) records all details related to the use of anesthesia and the patient's response to it before, during and after surgery.

Depending on the clinic or hospital, records related to the administration of anesthesia may be part of the surgery log or kept as a separate log (or form). Some clinics keep a surgery log and an anesthetic log (or form); others combine them into one log—a surgery/anesthetic log. These logs may be handwritten on paper and housed in the surgical suite while surgeries are taking place, then later filed for future reference. Or, the clinic or hospital may maintain digital logs. Either way, surgery and anesthetic logbooks must be maintained to meet legal and American Animal Hospital Association (AAHA) requirements.[2]

Before recording any information in a log or form, carefully review all required entry fields.

Make sure to track down all required pre-operative information. This may mean checking the patient's medical file or talking to the pet owner.

Confirm that the pet owner has signed the consent form and fee estimate for surgery.

Consult the patient's medical file for:

- Date of surgery
- Medical record number (if applicable)
- Patient and pet owner(s) names
- Patient's breed, sex and weight
- Procedure to be performed—For example: "R" rear leg amputation.

NOTE: *It is **vitally important** to confirm which side of the body—**right** leg, **left** ear, **right** eye—the surgery will be performed on. Use "L" for the patient's left side and "R" for the patient's right side. It is also important to note "front" or "rear" as appropriate.*

The Pre-Surgical Period

The pre-surgical period begins when a patient is admitted to the hospital and ends when anesthetic induction agents are administered.[3]

During the pre-surgical period, the following should be recorded in the appropriate log(s) (and/or forms):

- Pre-surgical exam information including vital signs and pre-anesthetic medications—At minimum, weight, temperature, pulse and respiration rates should be taken, and mucous membrane color and capillary refill time (see sidebars below) should be assessed. Ideally, blood pressure and SpO2 (oxygen saturation rate) are taken as well.
- Pre-surgical assessment score—Assigned by the veterinarian, based on the American Society of Anesthesiologists (ASA) rating of I-IV. (See *Pre-Anesthetic Patient Preparation* later in this stage for further explanation.)

Mucous Membrane Assessment (MMA)

Examining a patient's mucous membranes—typically, the gingiva (gums), oral mucosa (membranes lining the inside of the mouth) or conjunctiva (membranes covering the inside of the eyelids)—indicates how oxygenated the patient's blood is and how well it is circulating throughout the body. The chart below identifies the most common medical issues associated with abnormally colored mucous membranes.

Mucous Membrane Color	Most Common Medical Cause
Pink (NORMAL)	Patient's blood is oxygenated and the tissues are perfused (receiving an adequate supply of blood).
Very pale, white, gray (ABNORMAL)	Shock (sudden decrease in blood flow throughout the body); blood loss
Dark pink to red (ABNORMAL)	Hyperthermia (abnormally high body temperature); sepsis (immune system overreacts to infection causing low blood pressure, which can damage organs and cause septic shock); increased CO2 in the blood; sometimes shock or anaphylaxis (life-threatening allergic reaction, also called anaphylactic shock)
Yellow (ABNORMAL) (Jaundice)	liver problems, hemolytic anemia (excessive breakdown of red blood cells)
Blue to purple (ABNORMAL)	Can indicate lack of oxygen in the blood (cyanosis); blue or purple membranes and trouble breathing signal a medical emergency
Petechiae—pink or red small to medium spots on the gums (ABNORMAL)	Can indicate a bleeding disorder; can indicate Disseminated Intravascular Coagulation (DIC), a condition of abnormal clotting in blood vessels throughout body

Examination of the patient's mucous membranes also allows you to assess their level of hydration. Moist membranes indicate sufficient hydration; sticky or tacky membranes indicate some level of dehydration.

Capillary Refill Time (CRT)

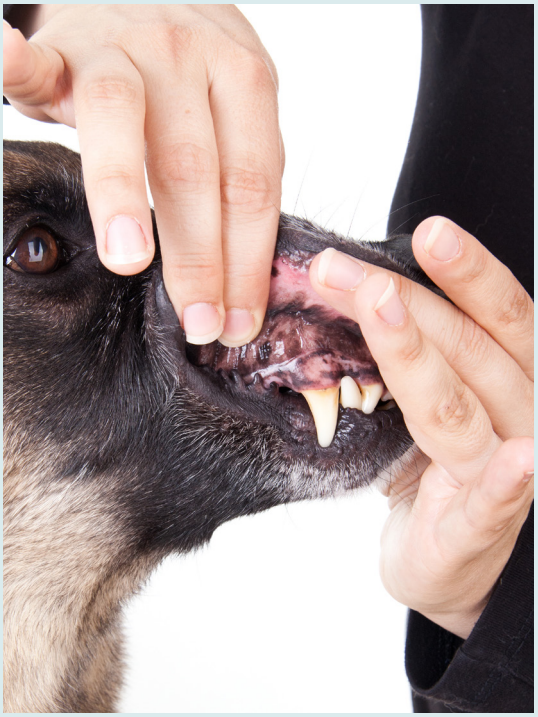
Capillary refill time (CRT) is the amount of time it takes for color (blood) to return to an area after you have applied and released manual pressure. CRT reveals how well the body is able to get blood to the tissues and arteries.

To assess CRT, apply pressure to the patient's gums with your finger. This pushes blood out of the capillaries. Clock the amount of time it takes for color (blood) to return.

A CRT of less than one second is too fast and can signal possible shock, severe infection or hyperthermia.

A CRT of two seconds is normal.

A CRT of more than two seconds is too slow, and although there are many situations that can cause prolonged CRT, it most commonly indicates shock, blood loss or heart disease.



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The Anesthetic Period

The anesthetic period begins when the patient is induced into anesthesia and ends when the anesthetic agent has been discontinued.[4] Surgery takes place during the anesthetic period.

During the anesthetic period, the following should be recorded in the appropriate log(s) (and/or forms):

- Names of pre-anesthetic and induction agents, dosages, routes of administration and times of administration
  - **NOTE:** *A pre-anesthetic drug is given before surgery to calm and relax the animal so they can fall asleep easily before being anesthetized. Induction agents move the patient into anesthetic sleep.*
- Amount and types of fluids administered along with medications and anesthetics—these may include:
  - Pre-medications
  - Induction agents
  - Oxygen flow
  - Anesthetic maintenance agents such as isoflurane, with vaporizer settings. (*See* The Anesthesia Machine *later in this stage.)*
  - Pain medications
  - Respiratory and/or cardiac stimulants (if used)
  - Blood transfused (if any)

An anesthetic record must be maintained for each patient. Anesthetic records provide a legal record of anesthetic procedures and monitoring of a patient's vital signs.[6] All relevant information pertaining to the administration of anesthesia must be part of either a Surgery/Anesthetic Log or a separate record or form that focuses specifically on anesthesia. The anesthetic record is valuable, as pertinent information can be derived from this form if the patient undergoes surgery at a later date.

Any complications and the time of their occurrence must be noted for future reference. (*See* Patient Monitoring *later in this stage for more information about anesthetic monitoring.*)

The Surgical Period

The surgical period begins when the surgeon makes the initial incision and ends when the surgeon completes closure of the surgical site.[5] NOTE*: The total length of surgery, from beginning of the initial incision to completion of closure of the surgical site should be recorded.*

During the surgical period, vital signs should be monitored and recorded every five minutes. These may include:

- Heart rate
- Blood pressure
- Pulse
- Temperature
- Respiratory rate
- SpO2 (oxygen saturation rate)
- Positive pressure ventilation (PPV)—This involves bagging the patient to expand their lungs to prevent atelectasis, a collapsed or airless state of the lung.[12]

Information in the list to the left should be documented every five to 15 minutes, according to hospital protocol, throughout the surgical procedure, until extubation (removal of the endotracheal tube) has been completed.

The Post-Surgical or Post-Anesthetic Period

The post-surgical or post-anesthetic period begins when the anesthetic agent is discontinued and ends when the patient is extubated (the endotracheal tube is removed)[10] or in sternal recumbency, depending on hospital protocol.[11]

During the post-surgical or post-anesthetic period, vital signs must be monitored and recorded every five to 10 minutes. Any medications given post-operatively must also be recorded in the appropriate log or form.

- Record the total length of surgery from beginning of initial incision to completion of closure of surgical site.
- The veterinary technician and/or veterinary assistant initial the appropriate log(s) and forms.
- The veterinarian initials the appropriate log(s) and forms.

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The Surgery Room

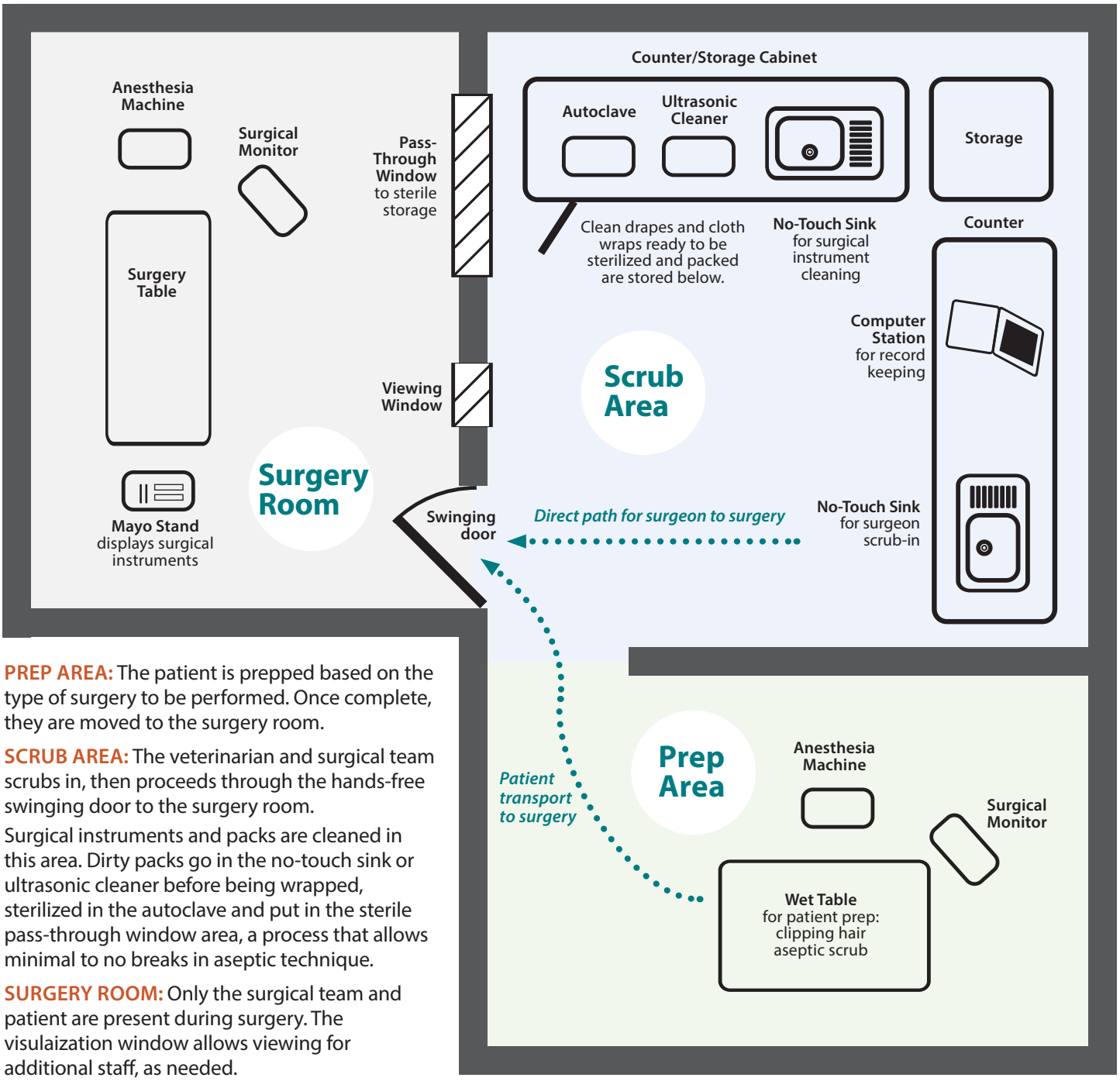
More than any other region of the veterinary facility, the surgery room, also commonly referred to as the "O.R.," requires meticulous maintenance to reduce the risk of any type of contamination. The surgery room should remain off-limits to the majority of hospital traffic and have only one doorway to go in or out. Only surgical staff needs to have access to the surgery room.

Asepsis must be kept in the surgery room. And, the surgery room should have positive pressure airflow to avoid contamination.[17] Once the patient is transferred to the surgery room, the movement of air is considered a pathway that pathogens can use to enter the surgical site. Examples of air movement include opening the surgery room door, the movement of a staff member—including the surgeon—especially if they need to switch sides of the surgical table. Turning off the air conditioning while preparing the surgery room for surgery and during surgery, so as not to change the air current, is recommended.

To avoid air movement, some hospitals install an intercom and/or phone so the veterinarian can call the patient's owner or communicate with other veterinary staff without leaving the room or having anyone enter the room.

According to the AAHA: "Ideally the surgery room is a separate room that should be used only for surgery. The room should be a dedicated room reserved for sterile surgical procedures. The surgery room should be large enough that personnel can easily move around the surgical table without contaminating the surgical field or the surgeon. If present, cabinets should be off the floor and constructed of nonporous material. The cabinets that hold sterile supplies should have doors that can be closed to protect the packs and other supplies from dust, debris and other contaminants." [18]

Basic Surgical Suite Layout



PREP AREA: The patient is prepped based on the type of surgery to be performed. Once complete, they are moved to the surgery room.

SCRUB AREA: The veterinarian and surgical team scrubs in, then proceeds through the hands-free swinging door to the surgery room.

Surgical instruments and packs are cleaned in this area. Dirty packs go in the no-touch sink or ultrasonic cleaner before being wrapped, sterilized in the autoclave and put in the sterile pass-through window area, a process that allows minimal to no breaks in aseptic technique.

SURGERY ROOM: Only the surgical team and patient are present during surgery. The visulaization window allows viewing for additional staff, as needed.