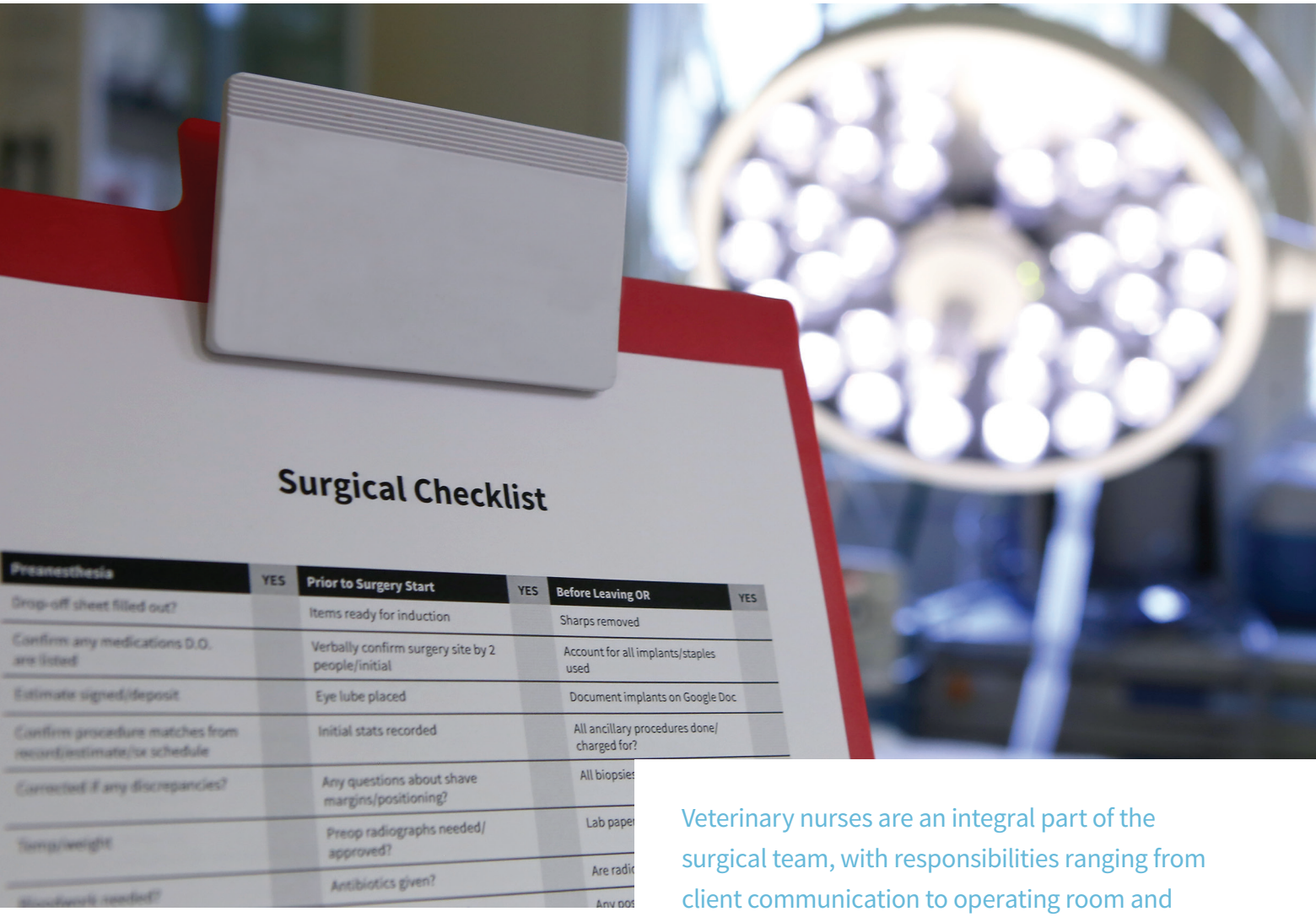

Preparing for Safe, Efficient Surgery

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Veterinary nurses are an integral part of the surgical team, with responsibilities ranging from client communication to operating room and patient preparation. Refer to these guidelines to help ensure that all stages of a procedure are completed safely and efficiently.

Surgical Checklists

The veterinary nurse should communicate closely with the veterinarian to confirm the procedure being performed, equipment needed, and the anesthetic plan. A surgical checklist can be used as a tool to help ensure that steps are not missed and mistakes are prevented. The World Health Organization (WHO) recommends using a surgical checklist[1] divided into 3 stages. (See **Figure 1**, page 41, & **Table 1**, page 40.)

At the end of each stage, the veterinary nurse should stop before proceeding further and confirm that previous items have been completed. The checklist helps with memory recall and establishes minimum necessary steps to complete a task.[1]

TABLE 1 **Items for a 3-Stage Checklist**
At a minimum, the checklist should include the following:

Stage	Checklist Items
Preanesthesia (ie, before induction)	Signed estimates/releases, client confirmation of surgical site, completion and review of required diagnostic tests and physical examination, anesthesia risk assessment and protocols
Presurgery (ie, before incision)	Confirmation of presurgical medication administration (ie, antibiotics), confirmation of procedure and patient, initial sponge and instrument counts
Postsurgery (ie, before moving patient to recovery)	Postoperative sponge and instrument counts, sharps removal, labeling of histopathology specimens, postoperative radiographs, postoperative concerns

TAKE ACTION

1. Create a 3-stage surgical checklist to help ensure steps are not missed and mistakes are prevented.
2. Always review the following items in detail with clients:
   - Preoperative instructions
   - The surgical estimate (to help ensure all costs are understood)
   - The general risks of anesthesia
   - The surgery being performed
3. Ensure proper planning, clear team communication, established surgical protocols, and checklists are used during all stages of surgery.

When creating a checklist, include items that have been frequently missed or where the consequences of missing the step could be devastating (eg, having no access to blood for a transfusion, failing to discover an item needed for a procedure was unavailable before surgery). The checklist should be short and easy to complete quickly.

Preoperative Instructions

When the surgical procedure is first scheduled, review the preoperative instructions with the client to ensure the patient will be fasted according to the veterinarian's directions and medication will be administered or withheld according to the veterinarian's preferences.

Hospital Admission

On the day of the surgery, review with the clients the detailed surgical estimate to ensure they understand all the costs, explain the general anesthesia risks, and obtain their signatures on the estimate and the anesthetic release form. The release form explains not only the general anesthesia risks but also the emergency treatment options that can be performed in the event of cardiac arrest. Describe each treatment option clearly and provide the clients adequate time to decide which option is most appropriate for their pet. Ask the clients to confirm the surgery being performed, and use a marker or clipper to identify the surgical location if it is not a standard site. Confirm when the patient last ate and what, if any, medications have been given. If the patient will require other medications during hospitalization, make sure to obtain this information from the clients.

Identify the surgical patient with a neckband that includes at minimum the patient's name. Based on the hospital, it may be helpful to include items such as breed, sex, color, markings, microchip number,

If the patient will require other medications during hospitalization, make sure to obtain this information from the clients.

scheduled procedure, or department/ward location in the hospital. Label the patient's cage or run with an identification card. Always confirm the patient's identity before performing preanesthetic procedures.

Diagnostic Test Results

Review preoperative diagnostic test results prior to anesthesia induction. Required tests vary based on the patient's prior medical history and the procedure to be performed. Common tests include a preoperative chemistry profile, CBC, and thoracic radiographs.

Blood tests can help identify potential organ dysfunction, hematologic abnormalities, abnormal platelet counts, and other changes that may affect the anesthetic or surgical plan. Thoracic radiographs allow evaluation of the cardiac silhouette and can help rule out conditions such as metastatic disease, pneumonia, and thoracic trauma.

Additional diagnostics (eg, ECG, coagulation profile, urinalysis, blood pressure measurement) may be indicated in some cases.

Operating Room Preparation

The operating room (OR) and all instrumentation needed should be set up and available prior to induction of anesthesia. The anesthesia machine should be checked for gas levels and tested for leaks. (See **Resource**, page 43.) Intravenous fluids can be set up for use in addition to any warming and monitoring devices. It is helpful to have "pull lists" for the various procedures done at the hospital indicating the instruments or equipment needed for a procedure or particular veterinarian. (See **Figure 2**.)

Anesthetic Assessment

Review the patient's record to determine general

Surgical Checklist

Preanesthesia	YES	Prior to Surgery Start	YES	Before Leaving OR	YES
Drop-off sheet filled out?		Items ready for induction		Sharps removed	
Confirm any medications D.O. are listed		Verbally confirm surgery site by 2 people/initial		Account for all implants/staples used	
Estimate signed/deposit		Eye lube placed		Document implants on Google Doc	
Confirm procedure matches from record/estimate/sx schedule		Initial stats recorded		All ancillary procedures done/ charged for?	
Corrected if any discrepancies?		Any questions about shave margins/positioning?		All biopsies/samples accounted for	
Temp/weight		Preop radiographs needed/ approved?		Lab paperwork completed?	
Bloodwork needed?		Antibiotics given?		Are radiographs needed?	
Exam in P record?		"Dirty prep" performed		Any postop recovery concerns?	
Surgery paperwork done?		Confirm procedure with surgeon		Any equipment problems to report?	
On surgery log?		AI log update		Scope images downloaded?	
CPR sheet printed?				Any tracking codes?	
Maropitant given, if applicable?				AI log update	
Premeds given?					
Skin checked?					
All equipment/implants available?					
Is the OR set up?					
Are blood products needed/ available?					
STOP before induction to confirm the above before proceeding.		**STOP** before making the incision to confirm the above.		**STOP** before leaving OR to confirm the above is complete.	

▲ **FIGURE 1** A sample surgical checklist adapted for veterinary medicine

Lists courtesy of Karen Theresa Ellis, LVT, VTS (Surgery)

Surgical Pull List

FRACTURES*
- Ortho pack
- Implants appropriate for size of patient
- Medirip
- Stryker/A-O/TPS/synthes
- Gelpi
- May need cerclage wire set & appropriate pin cutters

***Basic setup**
If not sure about positioning, ASK SURGEON.

FEMORAL HEAD OSTEOTOMY (FHO)*
- Knee pack
- Extra gelpi
- Medirip
- Battery Stryker/synthes/A-O/TPS
- May need rongeurs +/- bone-cutting forceps

***Basic setup**
95% of the time, the patient is positioned in lateral recumbency for a lateral approach to the hip joint. Occasionally, a ventral approach to the hip joint is made. In this case, the patient needs to be positioned in dorsal recumbency with a towel under the rump and the hind legs taped down in a flexed position—the surgeon usually helps with positioning. When this approach is to be used, it should be clearly written in the plan on the medical record by the surgeon.

GASTRIC DILATATION VOLVULUS (GDV/TORSION)*
- Soft pack
- Suction tip—Poole
- ABD pads
- Balfour of appropriate size for patient
- Gastric tube

Dr. HH: DeBakey forceps

***Basic setup**
Position patient in dorsal recumbency for a ventral midline approach

▲ **FIGURE 2** A sample pull list for setting up an operating room

TABLE 2

Anesthesia Classifications

Use this scale to determine a patient's status, which will help the veterinary team anticipate potential anesthetic complications.

ASA Level	Description
I	Normal healthy patient
II	Mild systemic disease
III	Severe systemic disease
IV	Severe systemic disease threatening the life of the patient
V	Patient is not expected to survive without surgery

health and identify specific anesthetic risks. The American Society of Anesthesiologists (ASA) grades a patient's status on a I to V scale, with level I presenting minimal risk and level V presenting extreme risk.[2] (See **Table 2**.)

Patient Preparation

Prior to induction, administer opioid and sedative premedications as prescribed by the surgeon, and place an IV catheter to facilitate induction. Once the patient is under anesthesia, attach the anesthetic monitors and record initial vital signs. Confirm the surgical incision site and the appropriate shave margins for the procedure with the surgeon. Complete all presurgical patient preparation, including bladder expression, preliminary aseptic preparation, and additional radiographs, before entering the OR. Complete the surgical scrub in the OR and position the patient.

Postsurgery

At the end of the surgery, the veterinary nurse should confirm that all procedures have been completed as planned. If any histopathology samples or cultures were

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taken, they should be labeled and prepared for submission. All sharps should be removed by the veterinarian or surgical assistant and all instruments and sponges accounted for. The surgical team should communicate about any potential postanesthetic/surgical concerns or any treatments needed prior to leaving the OR.

Conclusion

A highly efficient surgical team depends on proper planning, clear team communication, establishing and following surgical protocols, and using checklists during all stages of surgery.[3] Each additional minute a patient spends under anesthesia, not just surgical time, can increase a patient's risk for infection by 0.5%.[3] Increasing efficiency can lead to fewer mistakes and shorter anesthetic times, which in turn leads to fewer complications.

References

1. Gawande A. *The Checklist Manifesto: How to Get Things Right*. New York, NY: Picador; 2009:36.
2. Grimm KA, Lamont LA, Tranquilli WJ, Green SA, Robertson SA. *Veterinary Anesthesia and Analgesia*. 5th ed. Ames, IA: Wiley-Blackwell; 2015:12.
3. Beal MW, Brown DC, Shofer FS. The effects of perioperative hypothermia and the duration of anesthesia on postoperative wound infection rate in clean wounds: a retrospective study. *Vet Surg*. 2000;29(2):123-127.

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Resource

- Anesthesia machines: finding leaks. Coleman D. *Veterinary Team Brief.* **veterinaryteambrief.com/article/anesthesia-machines-finding-leaks**