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ASA Classification and Patient Safety Checklists

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Introduction

- ASA grading
- Anaesthetic safety checklists
- Simple steps that can be taken in order to help in your preparation for anaesthetising higher risk patients
- Before we explain these steps, it is important to remind ourselves why we should be doing this

Why is it important?

Anaesthesia carries risk

Anaesthesia is a common practice but should not be considered routine

Human risk[1]:

Death 1:50 000 (0.002%) All patients
1:100 000 (0.001%) ASA I and II patients

UK 2008: The Confidential Enquiry Into Perioperative Small Animal Fatalities[2].

Induction agents included propofol, thiopentone and ketamine. Alfaxan was not available during this study.

	ALL P.	ASA I - II	ASA III - V
DOG	1in601	1in1849	1in75
CAT	1in419	1in895	1in71
RABBIT	1in72	1in137	1in14

Data indicates veterinary anaesthesia carries higher risk in comparison to human anaesthesia, and highlights how much higher the risks are at ASA III-V.

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1. Fasting S. 2010. Risk in anaesthesia. *Tidsskr Nor Laegeforen.* **130:** 498-502.
2. Broadbelt et al (2008). The risk of death: The Confidential Enquiry into Perioperative Small Animal Fatalities. *Vet Anaes Analg*. **35:** 365-373

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ASA Classification

- American Society of Anesthesiologists' health classification system
- Assigns a health status to the patient allowing clinical recognition of those posing greater anaesthetic risk
- Documenting ASA classification on the anaesthetic chart provides a legal record of clinical assessment of the patient
- Provides the basis for anaesthetic protocol selection whilst taking into account the needs of individual patients

ASA Classification

- **Prompts thorough preclinical exam prior to anaesthesia**
- **Clinical diagnostic tests: choice based on patient's age, procedure planned and concurrent disease whilst respecting any financial constraints**
- **Results of preclinical exam and diagnostic tests may alter ASA classification and therefore anaesthetic plan[1]**
- **The use of a comprehensive guide is aimed to increase consistency of ASA classification compared to subjective judgement**

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1. Bille C. 2012. Risk of anaesthetic mortality in dogs and cats: an observational cohort study of 3546 cases. *Vet Anaesth Analg* Volume **39(1):** 59-68

ASA Classification and Anaesthetic Plans

ASA classification can alter anaesthetic plans in the following ways:

- **Premedication choices**
- **Induction of anaesthesia**
- **Maintenance of anaesthesia**
- **Recovery**

Example of tailored approach to ASA status – premedication choices in *dogs*

ASA	Premed protocol suggestions	Notes
ASA 1	ACP + opioid	
	(Dex)medetomidine + opioid	
ASA 2	ACP + opioid	
	(Dex)medetomidine + opioid	Avoid in CV or liver disease or GI FB
ASA 3	ACP (low dose) + opioid	Avoid if CV disease
	Benzodiazepine + opioid	CV friendly Better sedation in animals with more severe clinical disease
ASA 4	Benzodiazepine + opioid	
ASA 5	Opioid alone	For analgesia & dose sparing effects
	Benzodiazepine alone	For dose sparing effects
	No premedication	

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Murrell J. 2007. Choice of premedicants in cats and dogs. In Practice 29(2)

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Tailoring premedication protocols to ASA status – premedication choices in cats

ASA	Premed protocol suggestions	Notes
ASA 1	ACP + opioid	
	(Dex)medetomidine + opioid	Profound sedation advantageous in aggressive cats
ASA 2	ACP + opioid	
	(Dex)medetomidine + opioid	Avoid in CV or liver disease or GI FB
ASA 3	ACP (low dose) + opioid	Avoid if CV disease
	Benzodiazepine + opioid	Unreliable in cats CV friendly
	Benzodiazepine + ketamine	Avoid in CV disease Low dose ketamine (<5mg/kg) = sedation High dose ketamine (>5mg/kg) = anaesthesia
ASA 4	Benzodiazepine + opioid	
	Benzodiazepine + ketamine	Avoid in CV disease Avoid in shock
	Opioid alone	Useful in HCM
ASA 5	Opioid alone	For analgesia & dose sparing effects
	Benzodiazepine alone	For dose sparing effects
	No premedication	

Murrell J. 2007. Choice of premedicants in cats and dogs. In Practice 29(2)

ASA PHYSICAL STATUS CLASSIFICATION

A guide for veterinary patients

Health/Physical Status (not risk status)	Definition	Examples include but not limited to:	
ASA Physical Status I*	A normal healthy patient	• Healthy (non-brachycephalic) patients with no underlying disease presenting for elective procedures such as neutering or simple fracture repair	
ASA Physical Status II*	A patient with mild systemic disease (animal compensating well)	• Anaemia - mild (PCV: 30-40% dogs, 25-30% cats) • Brachycephalic considered healthy • Cardiac murmur - grade 1-2/6 - prior to full cardiac workup/with known cardiac disease • Dehydration - mild (4-6%) • Endocrinopathy - stable	• Epilepsy - controlled • Gastrointestinal disease - mild/stable • Geriatric patients considered otherwise healthy • Infection - mild/localised • Obesity • Young (>12 weeks) patient considered otherwise healthy
ASA Physical Status III*	A patient with severe systemic disease (animal not compensating fully)	• Anaemia - moderate (PCV: 20-30% dogs, 15-25% cats) • Brachycephalic with mild respiratory/gastrointestinal signs • Cardiac arrhythmia - all but controlled • Cardiac disease - all but controlled/compensated • Cardiac murmur - grade 3/6 - prior to full cardiac workup/with known cardiac disease • Dehydration - moderate (7-9%) • Endocrinopathy - uncontrolled/unstable • Epilepsy - uncontrolled/unstable	• Gastrointestinal disease - uncontrolled/unstable • Hepatic disease - all but controlled/compensated • Infection - moderate/severe/systemic (e.g. pyometra) • Pulmonary disease - all but controlled/compensated • Pyrexia • Renal disease - all but controlled/compensated • Very young/Neonatal (<12 weeks) patient otherwise healthy
ASA Physical Status IV*	A patient with severe systemic disease that is a constant threat to life	• Anaemia - severe (PCV: <20% dogs, <15% cats) • Brachycephalic with moderate/severe respiratory/gastrointestinal signs • Cardiac arrhythmia - severe/uncontrolled • Cardiac disease - decompensated • Cardiac murmur - grade 4-6/6 • Dehydration - severe (≥10%) • Diabetic Ketoacidosis (DKA) • Dyspnoea • Emaciation	• Endotoxemia • Epilepsy - Status epilepticus • Hepatic disease - uncontrolled/unstable • Immune mediated disease (e.g. IMHA/IMTP) • Pulmonary disease - uncontrolled/unstable • Renal disease - uncontrolled/unstable • Shock - severe (e.g. hypovolaemic, haemorrhagic) • Systemic inflammatory response syndrome (SIRS) • Uraemia • Urinary obstruction
ASA Physical Status V*	A moribund patient who is not expected to survive without the operation	• Cardiac disease - advanced/decompensated • Disseminated intravascular coagulopathy (DIC) • Endotoxemia - advanced/decompensated • Gastric dilation and volvulus • Hepatic disease - advanced/decompensated • Intracranial haemorrhage	• Multiple organ dysfunction (MODS) • Renal disease - advanced/decompensated • Severe trauma • Shock - advanced/decompensated (e.g. hypovolaemic, haemorrhagic) • Terminal malignancy/metastatic disease

The addition of the letter 'E' to a grade denotes an emergency defined as existing when delay in treatment of the patient would lead to a significant increase in the threat to life or body part.

Please note that the lists above should act only as a guide for assigning a preanesthetic ASA grade to a patient in veterinary practice. Significant subjectivity exists with such grading systems and the above guide should not be used in place of a veterinarian's clinical judgement when preparing their patient for anaesthesia.

*: American Society of Anesthesiologists (ASA) Physical Status Classification System

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Patient Safety Checklists

Recommended Procedures

ASSOCIATION OF VETERINARY ANAESTHETISTS

Pre-Anaesthesia

- ★ Has anything significant been identified in the history and/or clinical examination?
- ★ Do any abnormalities warrant further investigation?
- ★ Can any abnormalities be stabilised prior to anaesthesia?
- ★ What complications are anticipated during anaesthesia?
- ★ How can these complications be managed?
- ★ Would the patient benefit from premedication?
- ★ How will any pain associated with the procedure be managed?
- ★ How will anaesthesia be induced & maintained?
- ★ How will the patient be monitored?
- ★ How will the patient's body temperature be maintained?
- ★ How will the patient be managed in the post-anaesthetic period?
- ★ Are the required facilities, personnel & drugs available?

Anaesthetic Machine

- ☐ PRIMARY OXYGEN source checked
- ☐ BACK-UP OXYGEN available
- ☐ OXYGEN ALARM working (if present)
- ☐ FLOWMETERS working
- ☐ VAPORISER attached and full
- ☐ Anaesthetic machine passes LEAK TEST
- ☐ SCAVENGING checked
- ☐ Available MONITORING equipment functioning
- ☐ EMERGENCY equipment and drugs checked

Drugs / Equipment

- Endotracheal tubes (cuffs checked)
- Airway aids (e.g. laryngoscope, urinary catheter, lidocaine spray, suction, guide-wire/stylet)
- Self-inflating bag (or demand valve for equine anaesthetics)
- Epinephrine/adrenaline
- Atropine
- Antagonists (e.g. atipamezole, naloxone/butorphanol)
- Intravenous cannulae
- Isotonic crystalloid solution
- Fluid administration set

Drug charts & CPR algorithm (http://www.acvecc-recover.org/)

This checklist was written by the AVA with design and distribution support from Jurox

Anaesthetic Safety Checklist

ASSOCIATION OF VETERINARY ANAESTHETISTS

Pre-Induction

- ☐ Patient NAME, owner CONSENT & PROCEDURE confirmed
- ☐ IV CANNULA placed & patent
- ☐ AIRWAY EQUIPMENT available & functioning
- ☐ Endotracheal tube CUFFS checked
- ☐ ANAESTHETIC MACHINE checked today
- ☐ Adequate OXYGEN for proposed procedure
- ☐ BREATHING SYSTEM connected, leak free & APL VALVE OPEN
- ☐ Person assigned to MONITOR patient
- ☐ RISKS identified & COMMUNICATED
- ☐ EMERGENCY INTERVENTIONS available

Pre-Procedure — Time Out

- ☐ Patient NAME & PROCEDURE confirmed
- ☐ DEPTH of anaesthesia appropriate
- ☐ SAFETY CONCERNS COMMUNICATED

Recovery

- ☐ SAFETY CONCERNS COMMUNICATED
  Airway, Breathing, Circulation (fluid balance), Body Temperature, Pain
- ☐ ASSESSMENT & INTERVENTION PLAN confirmed
- ☐ ANALGESIC PLAN confirmed
- ☐ Person assigned to MONITOR patient

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https://www.alfaxan.co.uk/resources

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World Health Organisation (WHO)

- **The purpose of a checklist is to detect a potential error before it leads to harm**

- *"Human error in the complex world of modern medicine is inevitable. Harm to patients as the result of these errors is not. Checklists allow complex pathways of care to function with high reliability by giving users the opportunity to pause and take stock of their actions before proceeding to the next step. The WHO Surgical Safety checklist and others have improved reliability and helped to standardize care for thousands of individuals globally."*

Safety Checklists

- **Used initially in the aviation industry to reduce the incidence of human error leading to a catastrophic event**
- **2008: WHO surgical safety checklist introduced to human medicine.**
- **WHO Safe Surgery Saves Lives campaign showed a reduction in patient mortality from 1.5% to 0.8% in 2009 following the introduction of the checklist[1]**
- **Veterinary checklists are designed to reduce patient morbidity, mortality and to improve team communication**

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1. Safe Surgery Saves Lives Study Group: 'A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population'. *N Eng J Med,* 2009; **360:** 491-499

Pre-anaesthetic Checklists

"…It is not the action of ticking off a checklist that reduces complications, but performance of the actions it calls for"

Dr Lucian Leape, Harvard School of Public Health

- **Objectives:**
  - **Outline the order and manner of key procedures within anaesthetic process**
  - **Ensure completion of critical steps before moving forward**
  - **Reinforcement of recognised safe practices**
  - **Improve teamwork**
  - **Improve communication during the anaesthetic process**

Common potential errors avoided by checklists:

- Wrong drug/dose/route/patient[1]
- APL valve being closed
- Blocked ET tubes
- Faulty cuffs
- Attempting to spay male cats
- Clipping wrong leg for surgery
- Operating on wrong leg
- Forgetting perioperative antibiotics[2]
- Not checking temperature prior to recovery
- Forgetting analgesia in recovery
- Corneal ulcers post-surgery

Many errors are due to distraction and stress. Reflecting on errors then adding additional points to a checklist will avoid similar mistakes in the future.

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1. McMillan M. 2014. New frontiers for veterinary anaesthesia: the development of veterinary patient safety culture. *Vet Anaes Analg*. **41:** 224–226
2. Boston S. 2015. The Use of Checklists in Veterinary Surgery. *Proc WSAVA World Congress*.

How to use Checklists – steps to consider

- **Pre induction – confirm patient identity, procedure, risk factors, equipment for induction and anaesthesia checked, specific patient/procedural requirements, individual team member roles**
- **Pre-procedure: introduction of team members, reconfirm patient identity, reconfirm procedure, communicate concerns to anaesthesia and surgical teams, any special steps/equipment required**
- **Pre-recovery: recovery plan and person responsible, analgesia plan, patient concerns, any significant events, any samples to be submitted – if so, by whom?**

Getting the best out of checklists

- Each step should be completed at the appropriate time with all members of staff to be involved present and all activity paused
- Checklists should be read aloud by one member of staff and the responses completed by another member of staff
- Completion of the checklist should be recorded on the anaesthetic record or in the patient's file

Potential checklist limitations

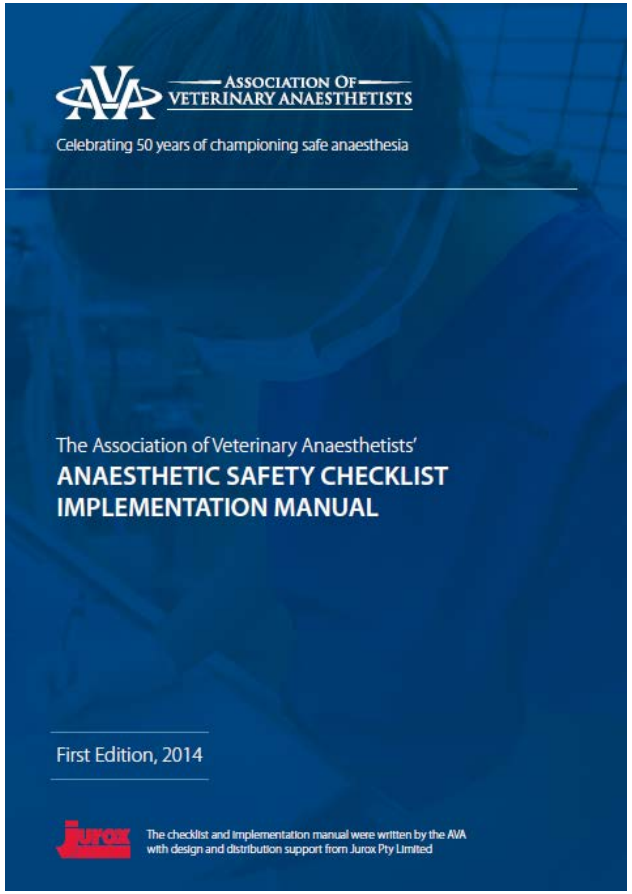
Checklists are not a guaranteed failsafe. Areas unlikely to be covered by an anaesthetic checklist include:

- **Instruments**
- **Sterility**
- **Equipment problems**
- **Imaging**
- **Consent**
- **Procedure times**
- **Blood loss risks**

A checklist should be reviewed and modified periodically, particularly following unforeseen complications or critical reflection.

Gasson J. 2013. Improving patient safety in the perioperative period: surgical safety checklists. *Vet Nurse.*

Anaesthetic Safety Checklist Implementation Manual



https://engage.jurox.com/uk-ava-anaesthetic-safety-checklist-implementation-manual

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Online resources

A webinar on ASA grading presented by specialist anaesthetist Jo Michou at London Vet Show 2018 can be found at:
www.alfaxan.co.uk/news/achieving-safer-anaesthesia-with-asa

ASA classification guide and AVA checklists are freely downloadable from:
www.alfaxan.co.uk/resources

Wipe-clean printed copies of checklists can be requested from the Alfaxan.co.uk website, or personalised checklists can be downloaded from:
www.alfaxan.co.uk/news/are-you-using-safety-checklists-in-your-practice

Further anaesthesia guidance available at www.alfaxan.co.uk/news from our Anaesthesia 1st newsletter

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