The anaesthetic plan covers the whole procedure – from premedication to recovery.

- It is for use in every patient scheduled for anaesthesia.
- It draws attention to particular things that might go wrong for this unique patient.
- It prompts thinking about how to deal with any potential problems.
- It will allow early intervention to stop small problems from turning into disasters.
- It incorporates a patient risk assessment.  
  https://www.asahq.org/standards-and-guidelines/asa-physical-status-classification-system

**CLINICAL EXAMINATION**

**BEFORE ANAESTHESIA:**

- **Use a checklist** - we are only human and we forget things.  
  https://ava.eu.com/resources/checklists/
- **Carry out a proper clinical examination** - Don’t forget to take a complete history, especially regarding any previous anaesthetics and concurrent medications.
  - Confirm the patient is healthy or identify any abnormalities that need special attention.
  - The cardiovascular (CV) and respiratory systems are the most vital for anaesthesia.
  - Is the animal in pain now or will the pain occur only post operatively?
  - Decide whether further preanaesthetic investigation is necessary.
  - Will blood tests make any difference to your anaesthetic plan?
  - Consider whether blood tests to provide some baseline information could be helpful e.g. for ‘healthy’ geriatric patients.
  - Would imaging such as a chest x-ray, ultrasound scan or echocardiography help?
  - Has this animal ever had a diagnostic work-up for any condition?

- **Check materials and equipment**
  - Fully check the anaesthetic machine; from the oxygen supply to the endotracheal (ET) tubes.
  - Do you have any leaks? Is the spare oxygen tank full?  Do you have to correct size of ET tube? Is a smaller one available if required? Does the light on the laryngoscope work? Do the connectors fit? Is the vaporiser full?
  - How will the patient be positioned on the table?  Is the surgical/diagnostic kit ready?
  - Are the monitors ready, calibrated & working?
  - How will the patient’s temperature be monitored and maintained?
  - Is any special equipment required for this patient?
  - Do you have emergency drug doses calculated and an emergency kit available if required?  
    https://recoverinitiative.org/cpr-guidelines/current-recover-guideline/
  - Is the environment suitable for induction – is it sufficiently peaceful?

**PREMEDICATION**

**SEDATION:**

- Sedatives calm the patient, smooth induction & recovery, reduce anxiety and reduce the required dose of induction agent which may reduce undesirable CV side effects.
- Sedation can facilitate easy placement of IV access.
- Acepromazine (ACP) is a tranquiliser, it calms without causing heavy sedation, it causes hypotension in a hypovolaemic patient and potentially hypothermia.  ACP is non-reversible.
- Alpha-2 agonists (medetomidine, dexmedetomidine, xylazine) provide profound sedation and have CV side effects including bradycardia and decreased cardiac output. Alpha-2 agonists are reversible.
- Consider whether sedation is needed? An opioid alone may be sufficient in a very painful or compromised patient.
For every unique animal
FECAVA BASIC PRACTICES IN VETERINARY ANAESTHESIA AND ANALGESIA
1: THE ANAESTHETIC PLAN

- Benzodiazepines (midazolam and diazepam) don’t usually provide sedation, are better used as co-induction agents (administered concurrently or after the induction agent where they can have a dose-sparing effect).
- https://ava.eu.com/resources/dechra-anaesthesia-apps/

ANAESTHETIC INDUCTION
INDUCTION AGENTS:
- Induction is usually performed with injectable agents: IV administration is rapid and allows dosing to effect. IM has slower onset and the entire calculated dose is given.
- IV access (catheter) is strongly advised for all anaesthetic procedures and essential for long procedures. IV access allows drug and fluid administration.
- Pre-oxygenation is advised, if well tolerated, prior to induction.
- Propofol must be given IV, it commonly causes respiratory depression. Usually a smooth, rapid recovery is seen.
- Alfaxalone provides rapid induction when administered IV and can sometimes be given IM (also for sedation) in cats and very small dogs. You may see less respiratory depression compared to propofol, expect to see tachycardia. Recovery should take place in a calm environment to ensure it is smooth, otherwise agitation and dysphoria can be observed.
- Ketamine can be given by any route, it causes less CV depression and maintains better respiratory drive (depending on the combination). A good sedative premedication or co-induction (benzodiazepine or alpha-2 agonist) is required to produce surgical depth of anaesthesia with good muscle relaxation.
- Monitor CV and respiratory function during induction. Pulse oximetry and ECG are particularly advised for high risk patients.
- Mask induction is less safe for the patient. It can cause stress and increases risks of volatile anaesthetic exposure of staff. However in the case of sevoflurane in cats, induction can be rapid and smooth which is useful in some circumstances.

PREMEDICATION:
- A combination of sedative & analgesic agents
  - Enhances sedation and reduces the required dose of induction agent.
  - Don’t forget about local anaesthetic techniques.
  - Opioids & NSAIDs can be used together for premedication.
- Consider a co-induction agent
  - Co-induction can provide an anaesthetic-sparing effect.
1: THE ANAESTHETIC PLAN

ANAESTHETIC MAINTENANCE

VOLATILE ANAESTHESIA:
- Use isoflurane or sevoflurane.
- Carried in oxygen or air/oxygen mixture (occasionally also N₂O, but this should not be >66%)
- It is easy to control depth of anaesthesia.
- Volatile agents cause CV and respiratory depression, particularly hypotension due to generalised vasodilation.
- Undergo little to no hepatic metabolism.
- Best administered via endotracheal tube to protect airway.
- Intubate with care, particularly in cats who are smaller with unique anatomy predisposing them to laryngeal damage and laryngospasm. In cats, desensitise arytenoids with 2% lidocaine.
- An anaesthetic machine is required.
- Oxygen supply, vaporiser, effective scavenging to prevent environmental pollution ensuring staff safety.
- Use an appropriate breathing circuit.
- Low dead space and work of breathing for cats & very small dogs (e.g. non-rebreathing systems)
  Needs ~500 ml/kg/min fresh gas flow
- Low flow for larger animals (e.g. rebreathing system) with less environmental impact.
  Needs ~10 ml/kg/min fresh gas flow

INJECTABLE ANAESTHESIA:
- Any of the IV agents can be used.
- Administer by IV bolus dose top up or infusion (CRI).
- May still require supplementary oxygen – use pulse oximetry to decide.
- Injectable-only protocols are often used IM for spay-neuter. Most consist of a single injection for premedication, induction and maintenance e.g. “kitty magic” protocols. (See infographic 6)

FLUID THERAPY:
- Does this patient need fluid therapy?
- Advised for any surgery over 30 minutes.
- Which type of fluid is required?
- What administration rate will be needed? Is fluid bolus resuscitation required?
- Initial rates 2-5 ml/kg/hr for cats and 3-6 ml/kg/hr in dogs (https://www.aaha.org/aaha-guidelines/fluid-therapy/fluid-therapy-guidelines/). Increase rate if patient is hypovolaemic or dehydrated.
- Respond to changes during anaesthesia (e.g. haemorrhage).

BALANCED ANAESTHESIA:
- Aim is for unconsciousness, muscle relaxation and analgesia – from the volatile or injectable anaesthetics, or a combination of both and extra analgesics.
- Partial IV anaesthesia (PIVA) = balanced anaesthesia provided by IV & inhaled volatiles together.
- IM ‘kitty magic’ protocols provide balanced anaesthesia in one injection.
- Consider using antagonists for reversible drugs (e.g. alpha-2 agonists).
- Remember that if you antagonise opioids (e.g. naloxone) you will also antagonise the analgesia.

LOCAL ANAESTHESIA:
- Could a suitable local or regional block be used for this patient?
- Part of balanced anaesthesia.
- Reduces the anaesthetic requirement.
- Reduces anaesthetic-related mortality.
- Contributes to post op analgesia.
- Post op NSAID? Give before return of consciousness if deemed unsuitable for pre-operative administration.
- See infographic 5
MONITORING
- Vital throughout anaesthesia and in recovery.
- All anaesthetics depress vital function while producing unconsciousness.
- Good monitoring allows a problem to be spotted early, before it becomes a disaster.
- Keep a written record – it is a legal document. [https://ava.eu.com/resources/checklists/](https://ava.eu.com/resources/checklists/)
- Pulse: palpation, pulse oximetry, doppler.
- Respiration: observation, capnography, pulse oximetry.
- Body temperature.
- Fluid administration.
- Blood loss.

ANAESTHETIC RECOVERY AND POSTOPERATIVE PAIN MANAGEMENT
- Death during recovery is not uncommon, especially cats so good monitoring is vital.
- Keep under continuous observation until able to sit up and maintain airway reliably.
- Do not leave until normal reflexes have returned, temperature > 37°C and they are able to stand, drink and eat.
- Prevent hypothermia - it delays anaesthetic recovery.
- Have an analgesic plan to manage postoperative pain. See infographic 2.
- Use a pain scoring tool - better pain management, better outcomes.
- Plan ‘take home’ medication appropriate to the patient and the procedure and provide the owner with detailed administration instructions and monitoring information.