<table>
<tr>
<td>Alpha 2 Adrenergic Agonist</td>
<td>Profound sedation

Profound analgesia

Muscle relaxation

Anxiolytic

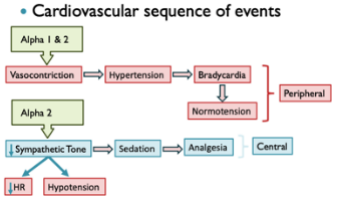
MAC sparring (40-80%)

Additive effects with other sedatives/analgesics

Can be reversible: Yohimbine, Atipamezole, Tolazoline</td>
<td>Cardiovascular effects:
- CO reduction (40-50%)
- Bradycardia: 2º heart block
- Catecholamine induced dysrhythmias (Xylazine)
- Hypertension & hypotension
- Poor tissue perfusion (peripheral vasoconstriction)
Resp. depression: Opioid (Mu agonist)

Emesis (Cats)
↓ Gastrointestinal motility
↓ Insulin release (Hyperglycemia)

↑ Uterine tone
↑ Urine production</td>
<td>Agonist Alpha 2 Adrenergic receptor (Major)
- Centrally: Locus coeruleus, Dorsal horn
- Peripheral: Blood vessels

Agonist Alpha 1 Adrenergic receptor (Minor)
- Peripheral: Blood vessels</td>
<td>See below
 
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<tr>
<td></td>
<td>Xylazine
- Selectivity ratio: 160: 1
- Duration of Action: 30-45 min
- Recommended Doses: 0.3-1.1 mg/kg IV (E)</td>
<td>Detomidine
- Selectivity ratio: 260:1
- Duration of Action: 45-60 min
- Recommended Doses: 8-10 mcg/kg IV (Equine)</td>
<td>Dexmedetomidine
- Selectivity ratio: 1620:1
- Duration of Action: 45-60 min (SA) 15-20 min (E)
- Doses: 2-10 mcg/kg IV, IM (K9), 5-20 mcg/kg IV, IM (F9), 4-9 mcg/kg IV (E)</td>
<td>Medetomidine
- Selectivity ratio: 1620:1
- Duration of Action: 60-120 min
- Doses: 5-20 mcg/kg IV, IM (K9), 10-40 mcg/kg IV, IM (F9), 7-9 mcg/kg IV (E)</td>
<td>Romifidine
- Selectivity ratio: 340:1
- Duration of Action: 60-90 min
- Recommended Doses: 40-80 mcg/kg IV (E)</td>
</tr>
<tr>
<td>Combo</td>
<td colspan="2">Dissociative + Benzodiazepines
- Ketamine + Diazepam/Midazolam
- Zoletil/Telazol (Tiletamine + Zolazepam)
- Uses
○ Profound sedation (dose dependent)
○ Muscle relaxation
○ Analgesia
○ Rapid onset
○ Sympathomimetic effects
○ Suitable for young healthy aggressive cats and dogs
- Disadvantages / Caution
○ Increased salivation (Airway obstruction)
○ Recovery may be rough
○ Caution in renal failure and HCM</td>
<td colspan="3">Neuroleptoanalgesia
- Combination:
○ Analgesic
○ Hypnosis (Tranquilizer or Sedative)
- Uses:
○ Analgesia + sedation
○ Improved sedation at lower dose than tranquilliser alone
○ Improved analgesia
○ Improved recovery
○ Doses adjustable for more or less sedation/analgesia
○ Suitable for “chemical restraint”</td>
</tr>
</table>

Lecture 1: Assessing Emergency Patients - Major body system assessment

Respiratory: Oxygenation and ventilation

Upper airway	Stertor (snore) vs stridor (higher pitched)
Respiratory Effort	Increased effort: respiratory disease Weak movement: LMN, intracranial disease, cervical lesions, fatigue
Respiratory Rate	Tachypnoea and bradypnoea both concerning
Pattern	Shallow depth (pleural dz), paradoxical, Cheyne stokes
Auscultation	Crackles (fluid), wheezes (airway thickening), dull (fluid, mass?)
Body Position	Orthopnoea (neck extended, elbows abducted)
Pulse Oximetry/ OMM	≥95% on room air (PaO2 > 80mmHg): Hypoxaemic / cyanotic, muddy, pale, injected, pink
Blood gas	Hypoxaemia, hypocapnoea, hypercapnoea

- Abnormalities on respiratory examination? → Provide oxygen
- Open mouth breathing, Gasping, Orthopnoeic posture, No/minimal chest wall movement, x breath sounds, Paradoxical movement of abdomen +/- cyanosis → intubate +/- ventilation
- TFAST/Radiographs
    - Pulmonary oedema (suspect CHF) → furosemide + monitor
    - Pleural effusion/ Pneumothorax → Thoracocentesis

Cardiovascular: Assess for poor tissue perfusion leading to inadequate oxygen delivery = SHOCK

OMM	White, pale, pink, injected, icteric
CRT	Rapid, normal (1-2s) or prolonged
Extremities	Warm, cold
Pulses	Femoral and dorsal pedal: Absent, thready, normal, bounding, hyperkinetic
Auscultation	Murmurs, arrhythmias
Blood pressure	Hypotensive, normal, hypertensive
ECG	Arrhythmias, normal
Lactate	Normal or increased (type 1 or 2)

Neurological: Is there significant neurological problems?

Assessment	**Findings**	**Treatment/ Action**
Seizures	Focal, tonic, status epilepticus	Antiseizures medications, check blood glucose and calcium, O2
Mentation	Abnormal/ normal	O2, check blood glucose, treat shock if present, consider hyperosmolar agent, elevate the head
Spinal cord injury	Nociception, withdrawn/ voluntary motor function	Immobilise

- PLR, menace, facial symmetry, mentation, scleral haemorrhage, pupil size & position, ears bleeding
- Injury or change in to brain: Intracranial pressure (ICP) ↑, blood flow to brain ↓ (reliance organ)
    - Cushing reflex = **hypertension + bradycardia:** ↑ ICP → **loss of autoregulation** → ↓ cerebral blood flow, cerebral ischaemia and accumulate CO2 → release **catecholamines** → **vasoconstriction and ↑CO** → Baroreceptors recognise hypertension→ vagally mediated **bradycardia**

Urinary: Assess for bladder rupture or blockage

Assessment	**Reasons**	**Actions to confirm**
No bladder felt	Empty, rupture/ leak?	Ultrasound (free fluid)
Large bladder	Can it be expressed?	ECG, urinary catherisation
Blocked bladder	Bradycardia + hyperkalaemia?	ECG, Ca^{2+} gluconate ± glucose ±insulin ±terbutaline, UNBLOCK

After primary survey → Secondary Survey: Repeat Primary Survey + Full Clinical Examination

- Toxin ingestion: Decontamination
- Reproductive emergency i.e. dystocia, priapism, paraphimosis Treat as appropriate
- Haemostasis: Control bleeding
- Pain: Analgesia

Survey diagnostics

- Intravenous access: Peripheral, Central venous, Intraosseous
- Collect blood: PCV/TP, Blood glucose, Blood smear, Blood gases, lactate electrolytes
- Ultrasound: Point of care ultrasound, Chest (lungs, pleural space, heart), Abdomen