Notes on use of this premedication / sedation “cheat sheet”

- Avoid using the same sedation/premedication “recipe” for all animals. Even ASA 1 dogs should be individually assessed with careful history taking and a full physical examination. Choice of premedication should be based on temperament, age, breed and any pre-existing conditions.

- Consider the aims of premedication when determining what drug combination to use for a particular animal:
  - calming/anxiolytic effect
  - improvement in ease of animal handling
  - provision of analgesia
  - reduction in dose of induction/maintenance agent

- Be aware of the onset of action of the drugs you are using, and time administration appropriately. It may not be appropriate to mix two drugs with a very different onset time in the same syringe, they may be better given separately at different times. As a guide, onset of maximal sedation following IM administration is:
  - ACP up to 45 minutes
  - Medetomidine 15-20 minutes
  - Methadone/morphine 20-30 minutes
  - Butorphanol 10-20 minutes

- Be aware of how long the opioid you have used at premedication will last. If not using any additional intra-operative analgesia you may have to repeat the opioid dose during surgery to ensure the dog has adequate analgesia on board. For example, methadone and morphine last up to 4 hours when administered IM.

- Methadone is referred to frequently here. Morphine may be used instead of methadone and at the same doses, however it frequently causes vomiting when used for premedication, and be aware of the risk of histamine release if used IV.

- Be careful to use premedication doses if you intend to follow the drug administration with general anaesthesia. These are generally lower doses than if sedation only is to be used, because adverse cardiopulmonary effects are usually exacerbated when combined with other anaesthetic agents.

- Here in Australia the \( \alpha_2 \)-adrenoceptor agonist we use mainly for small animals is medetomidine, so that drug is referred to frequently here. If you use dexmedetomidine, the dose given for medetomidine should be halved.

- I do not recommend the routine use of atropine as part of a premedication. Historically, atropine was included to reduce effects including hypersalivation and bradycardia that occurred with inhalants such as diethyl ether. Modern anaesthetics much less effect on the autonomic nervous system, and unnecessary use of atropine may produce unwanted effects such as tachycardia and tachyarrhythmias. I prefer to use this drug only when bradycardia is present and problematic (e.g. causing hypotension). Atropine should never be used with medetomidine or dexmedetomidine.
ASA 1 – calm and friendly

<table>
<thead>
<tr>
<th>PREMEDICATION</th>
<th>SEDATION ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>Non/mildly painful procedures</td>
</tr>
<tr>
<td>ACP 0.01 – 0.02 mg/kg + Methadone 0.3mg/kg IM</td>
<td>ACP 0.01 – 0.02 mg/kg + Butorphanol 0.2mg/kg IM</td>
</tr>
<tr>
<td>Medetomidine 2.5 – 3 µg/kg + Methadone 0.25mg/kg IM</td>
<td>Medetomidine 2.5 – 3 µg/kg + Butorphanol 0.2mg/kg IM</td>
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</tbody>
</table>

ASA 1 – excited and friendly

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>Non/mildly painful procedures</td>
</tr>
<tr>
<td>ACP 0.02 – 0.04 mg/kg + Methadone 0.3 – 0.5 mg/kg IM</td>
<td>ACP 0.02 – 0.04 mg/kg + Butorphanol 0.4mg/kg IM</td>
</tr>
<tr>
<td>Medetomidine 3 – 5 µg/kg + Methadone 0.3mg/kg IM</td>
<td>Medetomidine 3 – 5 µg/kg + Butorphanol 0.2mg/kg IM</td>
</tr>
</tbody>
</table>

ASA 1 – aggressive

- ACP 0.05mg/kg + Morphine 0.5 – 1 mg/kg IM
- ACP 0.03mg/kg + Medetomidine 5 mcg/kg + Morphine 0.5 - 1 mg/kg IM

The latter is my preferred combination for aggressive, difficult to handle dogs; adding ACP with medetomidine seems to provide more reliable sedation which may also last through to the recovery period.

ASA 1 – intravenous doses

Sometimes IV premedication/sedation is convenient, for instance if an IV catheter is already in place, or if a more rapid onset of action is required. With the options below, sedation is usually sufficient within 5 – 10 minutes of administration:

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<tbody>
<tr>
<td>Surgery</td>
<td>Non/mildly painful procedures</td>
</tr>
<tr>
<td>Methadone 0.1 – 0.2 mg/kg IV alone</td>
<td>Butorphanol 0.1 - 0.2mg/kg IV alone</td>
</tr>
<tr>
<td>Medetomidine 1 – 2 µg/kg + Methadone 0.1 - 0.2mg/kg IV</td>
<td>Medetomidine 1 – 2 µg/kg + Butorphanol 0.1mg/kg IV</td>
</tr>
</tbody>
</table>

Brachycephalic animals

Ideally use an opioid alone as ACP or medetomidine may produce sedation and relaxation of upper respiratory tract that precipitate airway obstruction. However, if the dog is very distressed/anxious addition of ACP 0.01 – 0.02mg/kg IM/IV may be required as stress can also lead to airway obstruction. Place these dogs under constant observation following premedication / sedation.
Often for animals with pre-existing illnesses an opioid alone is sufficient:

- Methadone 0.3 – 0.5 mg/kg IM (0.1 – 0.2 mg/kg IV)
- Fentanyl 5 – 10 µg/kg IV
- For non/mildly painful procedures; Butorphanol 0.2 – 0.4 mg/kg IM (0.1-0.2 mg/kg IV)

For animals that are very sick and depressed, or very old, if an opioid alone is insufficient consider adding:

- Midazolam 0.2 – 0.4 mg/kg IM (0.1 – 0.2 mg/kg IV)
  *(care with benzodiazepines in young healthy animals as they may actually cause excitement and disinhibition!)*
- Propofol in small increments IV (start at 0.5 mg/kg)
- Alfaxalone in small increments IV (start at 0.1 mg/kg)

** If using propofol or alfaxalone it is important to have equipment for endotracheal intubation, oxygen provision and manual ventilation readily available, should apnoea / hypoventilation / loss of ability to protect airway occur.

For younger, less sick animals consider adding a small dose of ACP or medetomidine:

- ACP 0.01mg/kg IM
- Medetomidine 2.5 µg/kg IM

However, there are many conditions for which the above two sedatives are contra-indicated or less desirable:

**Avoid ACP for:**

- Animals that are hypotensive, dehydrated / volume-depleted, in shock
- Animals that have platelet disease
- Animals with moderate-severe anaemia
- Animals undergoing intradermal skin testing (anti-histamine effect)
- Certain breeds: use with care and at low doses only in boxers, brachycephalics, and giant breed dogs
- Animals with moderate or severe cardiac disease (although may be useful in some situations where reduced afterload is beneficial such as mitral valve insufficiency)
- Animals at increased risk of hypotension during anaesthesia, or for whom hypotension would be particularly detrimental (e.g. renal failure, hepatic failure, brain disease – any reduction in oxygen delivery to these organs due to hypotension will exacerbate disease)
  *Remember that ACP lasts for several hours and cannot be ‘reversed’, so you need to be prepared to deal with the consequences of vasodilation and hypotension during anaesthesia*
- Neonates
- Animals with a history of seizures; ACP has traditionally been avoided in animals at risk of seizures due to risk of it lowering the seizure ‘threshold’. However, recent literature appears to contradict this concern, at least in certain patient groups (e.g. those undergoing myelography)

**Avoid medetomidine / dexmedetomidine for:**

- Animals that are hypotensive, dehydrated, volume-depleted, or in any form of shock
- Animals for which maintaining adequate cardiac output is particularly important.
  These drugs significantly reduce cardiac output, and so can compromise oxygen delivery to organs such as the heart, brain, kidneys, liver.
  This may exacerbate pre-existing disease/failure of these organs.
- Cardiac disease/arrhythmias
- Unresolved urinary tract obstruction (due to diuresis produced)
- Pregnancy
- Animals in which vomiting is undesirable
- Neonates