



الكورس الاول --- اسس العناية المركزة

SEDATION AND ANELGESIA IN ICU

Sawa University

College of health and medical techniques

Department of Anesthesia

..... Stage

جامعة ساوة الاهلية

كلية التقنيات الصحية والطبية

قسم تقنيات التخدير

.....المرحلة 3....

....محاضرة رقم 7...

Lecture No. 7

الجانب العملي

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SEDATION PRACTICES IN ICU



Why sedate?



Why sedate?

- Tube tolerance
- Ventilator synchronization
- Reduce agitation (withdrawal etc)
- Pain relief
- Facilitate interventions

Problems of inadequate sedation

- Sleep deprivation
- Increased stress
- Increased inflammatory mediators

CURRENT MOOD:



Oversedation

- Prolongs ICU stay
- Prolongs weaning
- Risk factor for delirium (BZDs)
- ?CIPN
- Hemodynamic disturbances

Undersedation:

- hyper-catabolism
- immunosuppression
- Hyper-coagulability
- increased sympathetic activity
- Accidental extubation
- Hyperglycemia

Non-pharmacological sedation

- Counselling (family, primary, nursing staff)
- Psychologist
- Psychiatrist
- Music
- Feeding
- Adequate hydration

NOT FOR VENTILATED PATIENTS

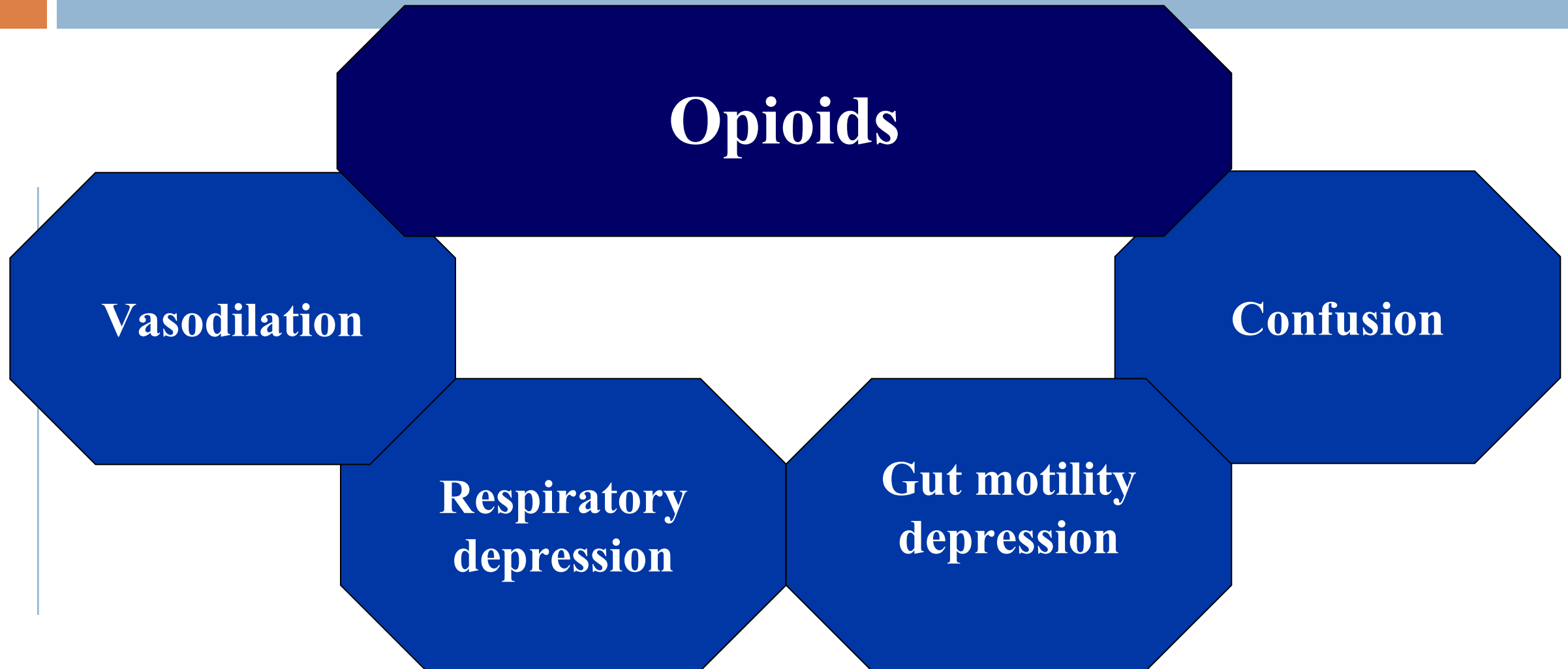
Ideal sedative:

- Short acting (plasma t 1/2 & context sensitivity)
- Amnesia
- Analgesia
- Less accumulation in peripheral tissues
- Hemodynamically stable
- No withdrawal effects
- No respiratory depression
- Bronchodilator

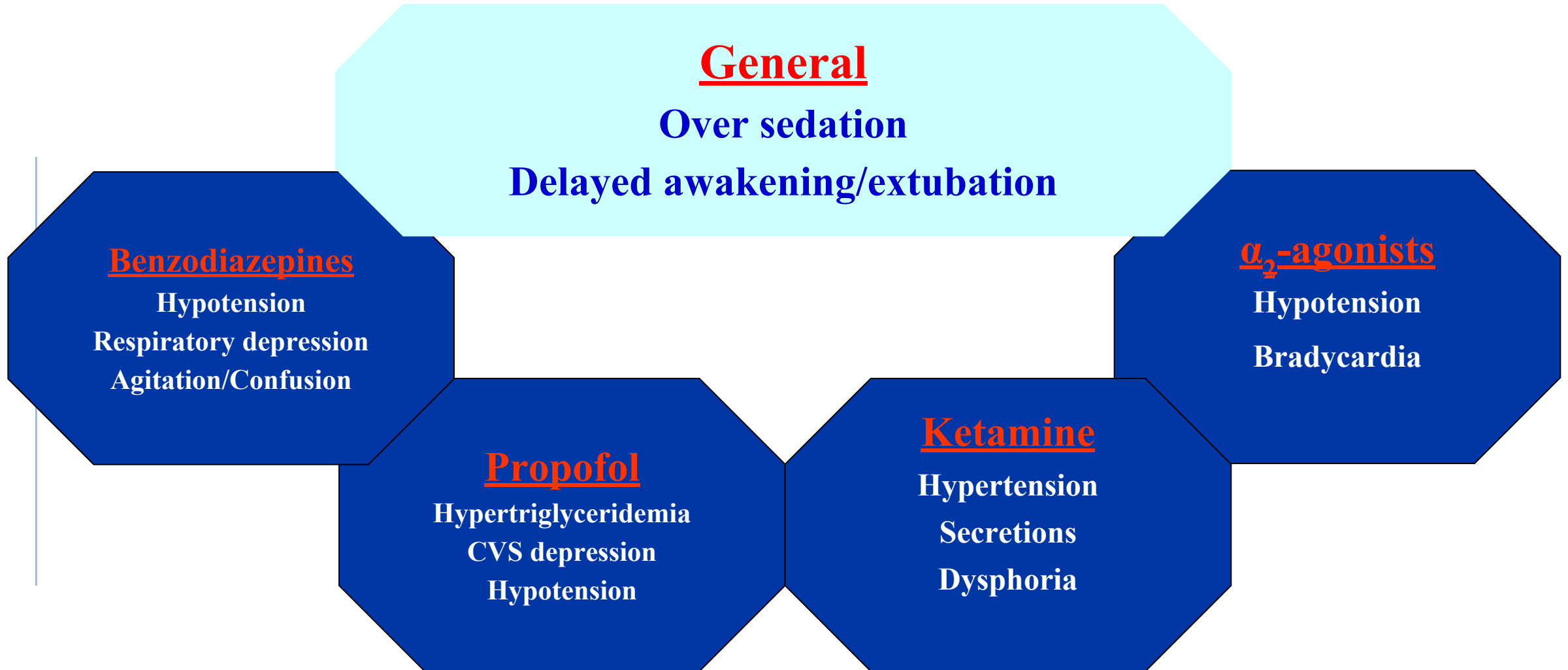
SEDATIVES

- Narcotics
- Benzodiazepines
- Miscellaneous

Unwanted side-effects of opioids



Unwanted side-effects of sedative agents



Painful situations:

- Suctioning
- Positioning/ bed making
- Procedures (including removals)

Sedation scores

- Ramsay sedation score
- Bloomsbury sedation score
- RASS
- Sedation Agitation Scale

**Richmond Agitation and Sedation Scale
(RASS)**

+4	Combative	violent, immediate danger to staff
+3	Very Agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent non-purposeful movement, fights ventilator
+1	Restless	Anxious, apprehensive but movements not aggressive or vigorous
0	Alert & calm	
-1	Drowsy	Not fully alert, but has sustained awakening to voice (eye opening & contact $\geq$ 10 sec)
-2	Light sedation	Briefly awakens to voice (eye opening & contact < 10 sec)
-3	Moderate sedation	Movement or eye-opening to voice (but no eye contact)
-4	Deep sedation	No response to voice, but movement or eye opening to <i>physical</i> stimulation
-5	Unarousable	No response to voice or <i>physical</i> stimulation

Analgesia / Sedation

Analgesia

- ▣ **Blunting or absence of sensation of pain or noxious stimuli**

Sedation

- ▣ **Complex neurophysiologic condition**
 - ▣ **Anxiolysis**
 - ▣ **Hypnosis (minimal motor activity; physically similar to sleep)**
 - ▣ **Amnesia**
- ▣ **Needs for sedation vary widely**
- ▣ **Target level: Sedation scoring**

Morphine

- **Pharmacologic effects of $\delta/\mu/\kappa$ -receptor agonists**
 - Analgesia, respiratory depression, GI effects, orthostatic hypotension, sedation and altered mentation
- **Metabolism**
 - Glucuronide conjugation; active metabolite, morphine-6-glucoronide (5-10%) and renally eliminated
 - Prolonged effects in renal/hepatic failure
- **Adverse effects**
 - Histamine release (allergic rxns, hypotension)
 - N&V, Pruritis

Fentanyl

- ❑ **CardioVascular stable**
 - ❑ **No histamine release, no hypotension**
 - ❑ **Bradycardia**
- ❑ **Metabolism**
 - ❑ **No active metabolites, dealkylation to nor fentanyl-> hydroxylation -> Excreted renally**
 - ❑ **Clearance affected by age, obesity, plasma protein content, liver disease, renal insufficiency**
 - ❑ **2+ compartment model pharmacokinetics, context sensitive T $\frac{1}{2}$, both an α and β T $\frac{1}{2}$, plasma 13 min, Terminal 350 min**

Alfentanil

- **Pharmacological effects**
 - **Hypotension, bradycardia and obtunds hypertensive response to laryngoscopy**
 - **Chest wall rigidity**
 - **Minimal histamine release**
- **Metabolism**
 - **Hepatic N de alkylation to nor alfentanil, inactive metabolite**
 - **Virtually no accumulation or prolonged terminal half life due to lower lipid solubility**

Remifentanyl

- **Similar effect to alfentanil**
- **Metabolism**
 - independent of hepatic and renal function
 - de-esterification by non specific plasma and tissue esterases to inactive metabolites

THANK YOU