

يقولوا اسئلة التوكسو ما بتطلع عن هاد الملخص، التعديل اللي عليه مش تقريغ لاشي، فقط نوبات لتسهيل دراسته و حفظه عن فهم حتى لو  
مش فاتحين السلايدات ، بالتوفيق 🌟💖

## TOXO

### Pesticides: organophosphate/carbamates

- Muscarinic, Nicotinic, CNS effects لايه هاي المبيدات بس تحفز الparasympathetic رح تجيب العيد بتنفس المريض
- Mx: ABCs and stabilize, **endotracheal intubation**, **ventilation: O2**, **remove contaminated clothing**, **wash contaminated skin with water and soap**, **antidotes**.
- Antidote:
  - o Atropine: antimuscurinic
  - o Pralidoxime: antinicotinic, **regenerates AChE** thru **dephosphorylation**, **reverse neuromuscular blockade** As it increases ACH to the extent that allows it to displace its receptors blockers

- Give **O2** first then **atropine** so no **Ventricular Dysrhythmias** in **hypoxic patient**

- Measure RBC cholinesterase activity لانه الاتروپين ممكن يعمل الاريثيميا

**No gastric lavage**

- Avoid **parasympathetics** (**physostigmine**, **succinylcholine**), **phenothiazine**, **anti-his**, **CNS depressants**, **opiates** These also inhibit AChE

- **Physostigmine**: **Anticholinestrase activity**, **more accumulation of Ach**, **more organophosphate toxicity**. هو و ال neostigmine كنا نستخدمهم بالتخدير عشان نعمل reverse ال neuromuscular blocking باننا نزيد تركيز ال ACH

Includes Chlorpromazine, they are anticholinergic blockers act on alpha receptors and so on, worsening the imbalance between already exacerbated parasympathetic and the sympathetic.

مش لاقية تفسير بس حفظتها انه  
هدول بنعسو وهيكل و المريض  
اصلا مش ناقصه تسطيل اكثر

### Ethanol

- Give **glucose** then **thiamine**
- **Don't give fomepizole/disulfiram/caffeine**
- **Don't induce emesis**

ما لقيت تفسير دقيق بس اللي فهمتو انه ما بدنا نعطي  
اشي يعمل **false masking** لاعراض المريض و يخليه  
يفوق بالكذب و هو وضعو الحقيقي عالستوى العضوي  
سني

يعني هاد يستخدموه لمعالجة  
الادمان بس مش وقت معالجة  
الادمان هله، المريض مقسم و ما  
بدنا نزيد اعراضه سوا

### Methanol AKA wood alcohol

- Antidote: **Fomepizole or ethanol**
- **Disulfiram**: **block aldehyde dehydrogenase**, **increase: formaldehyde**
- Can cause **blindness**
- **Death: Resp arrest**

**Gastric lavage, hemodialysis**

- **Charcoal ineffective** الفحم يعمل زي مادة فيها ثغرات يتمنص الجزيئات السامة و بتحبسها بتمنع امتصاصها بس لازم يكونها molecular weight بين ال100 و ال1000 دالتون او جرام لكل مول. تبع الميثانول مش مناسب لانه اقل من مية الMW تبعه و ما جيعرف الفحم يشتغل عليه.

### Antifreeze: ethylene glycol

- Monitor ECG for **arrythmias**
- Antidote: **Fomepizole or ethanol** نفس المبادئ اللي فوق
- **1<sup>st</sup>: CNS sx, 2<sup>nd</sup>: cardiopul sx, 3<sup>rd</sup>: renal sx**

**Hypocalcemia(tetany), M paralysis, convulsions, myocarditis, RF(Ca oxalate deposition), coma, seizures** ↓ Muscle

- **Disulfiram**: **moa: block aldehyde dehydrogenase**, **increase toxicity symptoms thru increase in glycolaldehyde** برضو نفس ميذا الاذي اللي يعملو مع التئين اللي قبل

- **Blood: Hypocalcemia, tx: Ca glutamate**

- **U/A: Ca oxalate**

- **Gastric lavage, hemodialysis**

كل المشاكل اللي قناها بسبب الhypocalcemia ف اكيد هو العلاج



بالايع متوازنو نستخدمه الalcohol

التسمم هون رح ياتر على ال  
Electrical conduction  
of the ❤️  
Why?

بسبب الhypocalcemia  
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مكتوب بالنت انه عادي متقدر نستخدمه بس حفظتها انه اجمالا  
الmetabolites اللي يتم انتاجها اثناء الethanol  
الmetabolism مثل الacetaldehyde الجسم بقدر يتصرف  
معهما احسن من الmetabolite اللي بيطلع مع الmethanol  
toxicity اللي هو formaldehyde هاد بكون كثير

اجمالا هاد الدوا يسكر على اول انزيم في alcohol  
alcohol و اللي هو alcohol  
metabolism pathway  
dehydrogenase بالتالي الكحول  
Will be excreted without being  
metabolized  
بس خاينا نحفظ زي المكتوب انه رح نستخدمه بس  
للكولين اللي بعد اما اول كجوله اللي هي اليثانول  
ما جتستخدمه

| Toxo                                        | Antidote                                     | Mx                                                                                                                                                                                       | Gastric lavage                  | Effect                                                                                                                              | avoid                                                                                                                                          |
|---------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Pesticides<br>organophosphate<br>Carbamates | Atropine<br>Pralidoxime                      | • measure RBC cholinesterase<br>give O <sub>2</sub><br>before<br>(prevent ventricular dysarrhythmias)                                                                                    | X                               | • nicotinic<br>• Muscarinic<br>• ENS                                                                                                | • charcoal<br>• CNS depressants<br>• opioids<br>• Anti histamine<br>• phenothiazide<br>• physostigmine<br>• parasympathetics (succinylcholine) |
| Ethanol                                     | thiamine                                     | give glucose before                                                                                                                                                                      | X                               | —                                                                                                                                   | • Caffeine<br>• Disulfiram<br>• emetics<br>• fomepizole<br>• charcoal                                                                          |
| Methanol                                    | fomepizole<br>or<br>ethanol                  | —                                                                                                                                                                                        | ✓<br>/hemodialysis              | death by resp arrest<br>cause blindness                                                                                             | Disulfiram                                                                                                                                     |
| Antifreeze                                  | fomepizole<br>or<br>ethanol                  | monitor GCa<br>if hypocalcemia → Ca gluconate                                                                                                                                            | ✓<br>/hemodialysis              | • CNS / Cardiac / renal<br>• U/A → Ca oxalate<br>• Muscle paralysis / seizure<br>• Coma / hypocalcemia                              | • Disulfiram<br>• charcoal                                                                                                                     |
| Doping<br>Can take caffeine                 | —                                            | Substances used in doping<br>① BB<br>② Blood transfusion<br>③ diuretics<br>④ morphine<br>⑤ EPO (erythropoietin)<br>⑥ Amphetamines<br>↳ cause acidity / alkalize urine<br>• Acid by urine | —                               | —                                                                                                                                   | —                                                                                                                                              |
| Amphetamines                                | None                                         | ABC<br>Supportive<br>monitor (measure blood level) + GCa arrhythmias                                                                                                                     | give X<br>charcoal              | • arrhythmias<br>• agitation → give benzo<br>• convulsions → give antiepileptics<br>• hyperthermia → give antipyretics<br>• wt loss | —                                                                                                                                              |
| Cocaine                                     | None                                         | • urine test<br>↳ benzoylecgonine                                                                                                                                                        | X                               | • Dopamine accumulation<br>↳ hyperthermia<br>↳ convulsions<br>↳ give benzo                                                          | —                                                                                                                                              |
| CO poisoning                                | 100% O <sub>2</sub> /<br>hyperbaric          | remove from place<br>& supportive<br>(keep blood acidosis)                                                                                                                               | X                               | cause of death<br>hypoxia<br>(lt shift of O <sub>2</sub> -Hb curve → ↑ O <sub>2</sub> affinity<br>↳ O <sub>2</sub> sat.)            | —                                                                                                                                              |
| Heroin                                      | Naloxone                                     | blood sample<br>↳ HIV<br>↳ hepatitis<br>urine test G-MAM<br>withdrawal tx → methadone / buprenorphine                                                                                    | X                               | —                                                                                                                                   | —                                                                                                                                              |
| Kerosene poisoning                          | —                                            | —                                                                                                                                                                                        | X<br>Cause chemical pneumonitis | death due to<br>Aspiration pneumonia                                                                                                | • avoid oil<br>• avoid charcoal<br>• avoid milk                                                                                                |
| HCl                                         | milk /<br>water                              | —                                                                                                                                                                                        | X                               | —                                                                                                                                   | • charcoal<br>• neutralizing w/ base                                                                                                           |
| KOH NaOH                                    | milk /<br>water                              | —                                                                                                                                                                                        | X                               | —                                                                                                                                   | //                                                                                                                                             |
| Paracetamol                                 | N-acetylcysteine<br>(cysteine + glutathione) | —                                                                                                                                                                                        | ✓<br>or charcoal if ≤ 4hr       | NAPQI metabolite (toxic)<br>removed by glutathione                                                                                  | —                                                                                                                                              |

● ChatGPT  
It's important to note that attempting to acidify or alkalize urine intentionally as a means to affect drug testing results or eliminate amphetamines from the body is considered unethical and can be dangerous. This practice is often associated with individuals trying to cheat drug tests.

Some athletes have misused beta blockers to reduce anxiety and tremors in sports that require steadiness and precision, like archery or shooting. However, this practice is prohibited in many sports and is considered unethical and unfair.

● Bushra  
How can beta blocker enhance athlete performance  
Some athletes have misused beta blockers to reduce anxiety and tremors in sports that require steadiness and precision, like archery or shooting. However, this practice is prohibited in many sports and is considered unethical and unfair.

Blood doping involves increasing the number of red blood cells in the body, which can improve oxygen-carrying capacity and endurance.

● ChatGPT  
Urinary acidification, in the context of drug elimination, refers to the process of making the urine more acidic by altering the pH of the urine. The idea behind this practice is that some drugs, including amphetamines, may become more ionized and less reabsorbed in the kidneys when the urine is more acidic. This could potentially increase the rate at which the drug is eliminated from the body.

● ChatGPT  
Ammonium chloride is an acidic compound. When dissolved in water, it forms an acidic solution. This is because ammonium chloride is a salt formed from the reaction of ammonia (a weak base) and hydrochloric acid (a strong acid). The resulting compound,  $\text{NH}_4\text{Cl}$ , dissociates in water to release hydrogen ions ( $\text{H}^+$ ), which makes the solution acidic.

## Charcoal ineffective

## Doping in sports

- Forbidden: beta blockers, blood transfusions, diuretics, morphine, EPO, amphetamines
- Not allowed to acidify/alkalinize urine of amphetamines
- Can take caffeine

## Amphetamines

Toxicity:

- Mx: ABC, supportive care, monitor
- No antidote
- Measure blood levels
- Accumulation of Catecholamines Dopamine, NE, Serotonin, E
- Monitor arrhythmia, agitation(give benzos), HTN, hyperthermia(give antipyretic), convulsions, irritability, nutritional status, hydration
- Weight loss
- Acidify urine to induce elimination (ammonium chloride)
- Give charcoal for gastric decontamination

## Cocaine: white powder, hyperthermia, convulsions

- Accumulation of Dopamine
- No antidote
- Benzos control convulsions
- Urine test: benzoylecgonine

## CO poisoning: isopropane water geyser/ vehicle diesel

- Mx: remove from place and supportive
- Antidote: 100% O2, hyperbaric O2.
- Cause of symptoms: (hypoxia)
- o left shift in O2-Hb dissociation curve, more affinity for O2, less O2 unloading in tissues
- o less O2% saturation of Hb bc CO binds more competitively (Carboxyhemoglobin)

- Keep acidosis of blood
- Cause of death: Hypoxia

## Heroin: IV marks, pinpoint pupils, depressed respiration

- Antidote: naloxone
- Withdrawal tx: methadone, buprenorphine
- Blood sample: risk for HIV, hepatitis
- Urine test: 6-MAM(metabolite)

## Kerosine poisoning

- Complication: Aspiration pneumonia?
- Gastric lavage: chemical pneumonitis

4. Avoid gastric lavage because of the risk of inhalation and hence pneumonitis.

However, if a child or adult accidentally swallows kerosene, it can have multiple adverse health effects due to its aspiration into the

Aspiration pneumonitis is the most common manifestation of kerosene ingestion due to its low viscosity, high volatility, and low surface tension. The treatment of aspiration pneumonitis due to kerosene poisoning is symptomatic including

- Don't use oils
- No charcoal, no milk(absorb more)

Kerosene is a hydrocarbon, and its ingestion can be harmful. The primary concern is that if kerosene is ingested and then vomited, it can potentially be aspirated into the lungs, leading to lung problems. Introducing milk or other fatty substances into the digestive tract does not prevent this risk and can even increase it. Mixing kerosene with milk can create an emulsion, which may be more challenging to expel from the lungs if aspiration occurs.

The primary treatment for kerosene poisoning involves supportive care only. In some cases, interventions to manage complications, if someone has

1. Low Adsorption: Activated charcoal works by adsorbing (binding) certain substances in the gastrointestinal tract and preventing them from being absorbed into the bloodstream. However, kerosene is a hydrocarbon and is not effectively adsorbed by activated charcoal. Hydrocarbons like kerosene have low solubility in water and are not easily trapped by the activated charcoal.

### HCl (acid)

- Milk (demulcent/emulsant: lubricate and protect mucous membranes)/water (dilution)
- Charcoal ineffective, no gastric lavage(perforation) ← ما بدنا نرجع تمرير الحمض من esophagus و هيك لانه رح يالتهب و يصير ال
- C/I: emesis induction (mucosal irritation, pneumonia, expulsion) → دائما ما بصير نحاول نعاادل الحمض مع القاعدة او القاعدة مع الحمض مشان كليات الحرارة اللي رح تنتج
- Don't dilute with base

### NaOH/ KOH (base)

- Milk (demulcent/emulsant)/water (dilution)
- Charcoal ineffective, no gastric lavage
- C/I: emesis induction
- Don't neutralize/dilute with acid

### Paracetamol

- NAPQI: toxic metabolite removed by glutathione
- Antidote: N-acetylcysteine: replenish glutathione
- Mx: gastric lavage/ charcoal if within an hr

