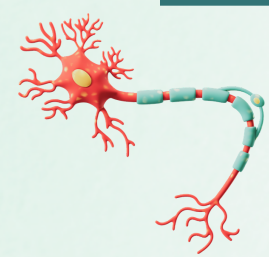




THE ICK-OTINE EFFECT

10 facts about nicotine



Mechanism of Action

Nicotine is rapidly absorbed, enters circulation and moves quickly to the brain. Here, it binds to nicotine acetylcholine receptors causing release of Dopamine, Norepinephrine, Acetylcholine, GABA, Serotonin, Glutamate, and Endorphins.

Pharmacokinetics



Absorption: Lungs, Oral mucosa, skin, GI tract

Volume of distribution: 1L/Kg

Metabolism: Hepatic via CYP2D6 and CYP2A6. Primary metabolite: Cotinine

Half-life: 1-4h, Cotinine: 19-20 h



Sources and Routes

Cigarettes, Chew, Gum, Transdermal patches, Spray/inhaler, Lozenges, Plants/leaves, Pesticides and Insecticides

Early toxicity



GI: increased salivation, nausea, vomiting, diaphoresis, and diarrhea

Cardiovascular: HTN, Tachycardia, Pallor

Neuro: headache, dizziness, ataxia, confusion

Severe toxicity includes cardiac dysrhythmias, seizures, muscle fasciculations



Late toxicity:

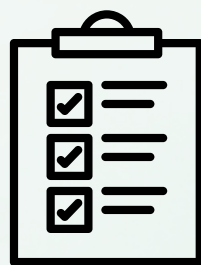
GI: Diarrhea

Respiratory: Hypoventilation, Apnea

Cardiovascular: Bradycardia, hypotension, dysrhythmias shock

Neuro: Lethargy, weakness, paralysis

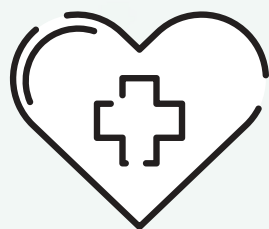
Diagnosis



Primarily clinical. Based on history and presentation.

Serum or urinary concentrations of nicotine and metabolites is not really helpful in acute poisonings.

Cotinine has a longer detection window, therefore urinary cotinine levels can be used to assess for abstinence



Management

Supportive care is the mainstay of treatment.

Assess ABCs

Antiemetics for emesis

Treat seizures with benzodiazepines

Patients with skin exposure to liquids should be undressed and skin washed thoroughly with soap and water

Pediatric risks



Children are at highest risk.

Acute poisoning can cause vomiting, seizures, arrhythmias, respiratory failure, and cardiovascular collapse

Children ingesting just 1 cigarette or 3 cigarette butts can develop signs of toxicity



Clinical Pearls

Nicotine is a highly addictive stimulant and one of the most widely used xenobiotics in the world.

There are direct health affects of chronic nicotine use.

GI symptoms are usually the most common

Consult poison control for all significant exposures especially for pediatric patients

Remember, there is no Antidote. Say no to Tobacco!



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- Nelson, L. S., Lewin, N. A., Howland, M. A., Hoffman, R. S., Goldfrank, L. R., & Flomenbaum, N. E. (2011). Goldfrank’s toxicologic emergencies (9th ed.). McGraw-Hill Medical.