APPROACH TO THE PATIENT WITH AN UNKNOWN OVERDOSE
Approach to the Patient with an Unknown Overdose

Learning objectives:

• Define a systematic and consistent approach
• Establish a high yield physical exam (toxidromes)
• Identify the minimum essential tests
• Predict toxicity
• Involve the Poison Centre
• Decide on safe discharge
Approach to the Patient with an Unknown Overdose

• Need systematic and consistent approach

• Involves recognition, identification, assessment and prediction

• Prognosis and clinical course of patient depends on quality of care delivered within first few hours

• Management
The Poisoned Patient

• **Treatment**
  – ABCs
  – Dextrose, naloxone, thiamine
  – Decontamination
  – Enhanced Elimination
  – Focused Therapy/Antidotes
  – Get Tox Help

• **Diagnosis**
  – History
  – Physical Exam
  – Toxidrome Recognition
  – Diagnostic Tests

History

• Which drug(s) was / were taken?

• When?

• How much?

• PMHx, previous exposures
Toxidrome Case 1

• 16 year old female; out late the night before
• Brought by parents with altered LOC
• In ED, she is hallucinating
• Vitals: BP 140/90, HR 120, RR 30, T 39.0°C
• Pupils are 6 mm bilat
• Lower abdomen fullness
• Skin is dry, appears flushed
Toxidrome Case 2

• 18 year old male; multiple visits to ED with behaviour issues
• Had seizure at home
• In ED, he is tremulous and agitated
• Vitals: BP 150/100, HR 130, RR 34, T 39.0 C
• Pupils: 6 mm bilat
• Skin: Diaphoretic
• Old chart indicates he is on methylphenidate
<table>
<thead>
<tr>
<th>Toxidrome</th>
<th>Mental Status</th>
<th>Pupils</th>
<th>Vital Signs</th>
<th>Other</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Anticholinergics</td>
<td>Hypervigilance, Agitation, Hallucinations, Delirium, Coma</td>
<td>Mydriasis</td>
<td>↑Temp, ↑HR, ↑BP, ↑RR</td>
<td>Dry, flushed, Dry mucosa, ↓BS, Urinary retention</td>
<td>Antihistamine, TCA, Jimson Weed, Weed, Atropine</td>
</tr>
<tr>
<td>Sympathomimetic</td>
<td>Hyperalert, Agitation, Hallucinations, Paranoia</td>
<td>Mydriasis</td>
<td>↑HR, ↑Temp, ↑BP, ↑RR</td>
<td>Diaphoresis, Tremors, Sz, Hyperreflexia</td>
<td>Cocaine, Amphetamine, Theophylline, Caffeine, Bath Salts</td>
</tr>
</tbody>
</table>
Toxidrome Case 3

• 37 year old male; found unresponsive on side of road
• In ED, GCS 3
• Vitals: BP 90/60, HR 60, RR 12, T 35.6 C
• Pupils: 2 mm bilat
• Skin: Track marks
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<tbody>
<tr>
<td>Opioid</td>
<td>CNS Depression</td>
<td>Miosis</td>
<td>↓ Temp</td>
<td>Pulmonary Edema, Needle Marks</td>
<td>Heroin, Morphine, Methadone</td>
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<tr>
<td></td>
<td>Coma</td>
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<td>↓ HR</td>
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<td>↓ RR</td>
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Toxidrome Case 4

- 3 year female rushed to ED
- Swallowed unknown liquid in garage
- In ED, lethargic with marked respiratory distress
- Vitals: BP 80/60, HR 140, RR 44
- Pupils: 2 mm bilat
- Skin: diaphoretic, increased tearing
- Lungs: bilat diffuse wheezes
- Marked oral secretions, garlic breath
What is the toxidrome?

A. Sympathomimetics
B. Anticholinergics
C. Cholinergic
D. Opioid
E. NMS
F. Serotonergic
G. Hallucinogenic
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<tbody>
<tr>
<td>Cholinergics</td>
<td>Confusion</td>
<td>Miosis</td>
<td>↓HR, ↑HR</td>
<td><strong>Muscarinic</strong></td>
<td>OrganoP Insecticides Nerve Agents Pilocarpine</td>
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<td></td>
<td>Coma</td>
<td></td>
<td>↑BP, ↑RR, ↓RR</td>
<td>Diarrhea</td>
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<td>Urination</td>
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<td>Bronchosecretions</td>
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<td>Emesis</td>
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<td>Lacrimation</td>
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<td>Lethargic</td>
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<td>Salivation</td>
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<td><strong>Nicotinic</strong></td>
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<td>Weakness</td>
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<td>Tremors</td>
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<td>Fasiculation</td>
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<td>Seizures</td>
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Toxidrome Case 5

- 17 year old male; out all night long
- Brought in by parents because not acting self
- Speaking with a new Australian accent
- Vitals: BP 140/90, HR 110, RR 30, T 38.6 C
- Pupils: 6 mm bilat, nystagmus
<table>
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<th>Vital Signs</th>
<th>Other</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hallucinogenic</td>
<td>Hallucinations Depersonalization Agitation</td>
<td>Mydriasis</td>
<td>↑Temp ↑HR ↑BP ↑RR</td>
<td>Nystagmus</td>
<td>PCP, LSD, Designer Amphetamines Ketamine</td>
</tr>
</tbody>
</table>
Toxidromes Case 6

- 76 year old man from nursing home
- Sent for assessment of fever, more confused than usual!
- In ED, somnolent
- Vitals: BP 150/100, HR 110, T 39.6 C
- Diaphoretic, severe muscle rigidity in upper and lower limbs
- Nursing home drug profile shows that he was started on olanzapine 5 days ago
Toxidrome Case 7

- 23 year old female; brought to ED by friend
- Anxious, distressed, confused
- Vitals: BP 160/100, 110, 20, T 38.4 C
- Diaphoretic, tremulous
- Rigidity of lower limbs, shaky eye movements, brisk deep tendon reflexes
- Friend states that patient has been very depressed lately and went to see FP yesterday about starting meds for depression
What is the toxidrome?

A. Sympathomimetics
B. Anticholinergics
C. Cholinergic
D. Opioid
E. NMS
F. Serotonergic
G. Hallucinogenic
Toxic Vital Signs

- Temperature
- HR
- BP
- RR
- Neurological Exam: mental status, rigidity
- Eye: nystagmus
- Skin
- Odors
Investigations - Labs

• CBC, Lytes, BUN, Cr, Gluc, ABG, βhCG

• Anion Gap = Na – (Cl + HCO₃)

• Serum Osm = 2Na + Glucose + Urea + (1.2)EtOH
Investigations - Urine Tox Screens

ROUTINE URINE TOX SCREENS ARE NOT Useful in the Acute Setting
Investigations - Tests

• Quantitative blood tests to predict toxicity or guide specific therapy

• Acetaminophen, ASA, EtOH levels

• Look for a Tox diagnosis in patients with prolonged coma, seizure, metabolic acidosis
Investigations - ECG
Investigations - AXR

Gopalan
Investigations - AXR


Gopalan
Indications of Severe Toxicity

- Ingested quantity
- Serious delayed effects
- Natural removal mechanism is impaired
- Clinical condition deteriorating despite maximum supportive care
- Clinical evidence of severe toxicity

Disposition

• Mild toxicity: observe for 4-6 hours; until asymptomatic

• Mod/severe toxicity: needs admission

• Some agents require prolonged observation

• All patients presenting with intentional poisoning should have a Psychiatric evaluation
Disposition

• Presence of *any* of the following clinical criteria predicted a complicated hospital course:
  – PaCO2 > 45
  – Intubated
  – Seizures
  – Unresponsive
  – Non-sinus cardiac rhythm
  – 2\textsuperscript{nd} or 3\textsuperscript{rd} degree block
  – SBP < 80
  – QRS > 0.12s

<table>
<thead>
<tr>
<th>Toxic Time Bombs</th>
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<tbody>
<tr>
<td>Acetaminophen</td>
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<tr>
<td>Anticoagulants</td>
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<tr>
<td>Antimetabolites</td>
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<td>Body packers</td>
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<tr>
<td>Enteric coated products</td>
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<td>Heavy metals</td>
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<td>Iron</td>
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<td>Lithium</td>
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<td>Lomotil</td>
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<td>Methadone</td>
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<td>MAOIs</td>
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<td>Hypoglycemics</td>
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<td>Sotalol</td>
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<td>SR products</td>
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<td>Thyroids meds</td>
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<td>Toxic alcohols</td>
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<td>Valproic acid</td>
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<td>Tricyclics</td>
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Pitfalls

• Ingestion of multiple agents common

• Not all altered mental status is Tox: Consider trauma, CVA, sepsis, metabolic causes
Poisoned Patient

**Treatment**
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**Diagnosis**
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Questions?