1) Mushrooms

General: many species, difficult to differentiate between edible and toxic ones, variable locations

a) **GI irritants** - most common, NV within 1 hour, symptoms up to 6 hrs.

b) **Amatoxins** - most common lethal mushroom, 50% mortality rate in children less than 10 years of age
   - inhibits protein synthesis therefore affecting cells that replicate fast ie. GI / liver, undergoes enterohepatic circulation
   - hallmark is *delayed* symptoms (up to 12 hours) then GI symptoms >> remission >> hepatorenal failure (36 - 72 hrs.)
   - structure includes the cap (pileus), gills, a ring (annulus), and a cup (volva) at the bottom
   - examples: Amanita phalloides, verna, virosa, Galerina

   Management: ABCs, multiple dose charcoal, check Dstick, LFTs, Cr.
   Antidote - PenG: increases excretion of amatoxins
   Dialysis, liver transplant

c) **Hallucinogenic** - rapid onset and resolution

Psilocybin - mood changes, hilarity, kids fearful

Amanita pantherina - mania, slurred speech, seizures, ataxia

Management: supportive care

d) **Muscarinic** - cholinergic crisis = SLUDGE

Inocybe species

Management: atropine, charcoal
2) Plants

General: 10% of phone calls to the Poison Center, difficult to identify, some parts of the plant are toxic and others are not, toxicity also may depend on the time of year

a) GI irritants

Pokeweed - toxicity increases as plant matures
- root, leaves, and berries toxic (especially green berries)
- NV, diarrhea improves over one day
- charcoal, fluids

Wisteria - toxin in pods, seeds and flowers (2 seeds may cause serious toxicity in a child)
- NV, dehydration
- charcoal, fluids

Castor Bean - toxin (ricin) in beans lead to severe dehydration
- no effects if swallowed whole
- 4 to 5 seeds may lead to shock, death
- supportive care, charcoal, fluids

b) Calcium Oxalate crystals

- most common plant exposure, some indoor plants
- oral and pharyngeal burns due to crystals
- Examples: dieffenbachia (dumcane), philodendron, elephant ears
- popsicles, lime juice usually all that is needed
- if severe drooling, dysphagia >>> ER

c) Cardiac glycosides

- effect Na-K-ATPase pump >>> hyperkalemia, AV conduction delay

Oleander - one leaf can be fatal, can have toxicity by just chewing the flower
- NV then digitalis-like effect for 3 - 6 days
- treat supportively, atropine, pacing, Fab fragments

Lily of the Valley - less toxic than oleander

Rhododendron - 800 species, all parts toxic
- oral irritation, NV, bradycardia, conduction delay
- decontaminate if > 3 leaves/flowers eaten, atropine
d) **Anticholinergics**

- all parts poisonous and contain atropine or scopalamine

  Jimson Weed - mydriasis, hallucinations, fever, tachycardia, seizures
  - fruit a spiny capsule with many black seeds
  - decontaminate up to 24 hrs., physostigmine

Deadly Nightshade - (atropa belladona) - coastal dunes and marshes

Lantana - unripe green berries with atropine-like toxin, ? how many berries are toxic so decontamination warranted for a small child

e) **Ergot Alkaloid**

Yellow Jasmine - minimal lethal dose unknown, flowers/leaves toxic
  - HA, dry mouth, ptosis, mydriasis, bradycardia, szr.
  - supportive care

3) **Snakes**

- highest rate of venomous snakes in the South
- venom with potent enzymes effect coagulation

<table>
<thead>
<tr>
<th>Venomous</th>
<th>Nonvenomous</th>
</tr>
</thead>
<tbody>
<tr>
<td>triangular head</td>
<td>round head</td>
</tr>
<tr>
<td>elliptical eyes</td>
<td>round eyes</td>
</tr>
<tr>
<td>pits</td>
<td>no pits</td>
</tr>
<tr>
<td>single caudal plates</td>
<td>double caudal plates</td>
</tr>
<tr>
<td>fangs</td>
<td>no fangs</td>
</tr>
</tbody>
</table>

- over 95% in the pit viper family: eastern diamondback rattlesnake
copperhead
cottonmouth

- 1% Elapidae family: Coral snake

a) **Eastern Diamondback rattler**

- accounts for 90% of lethal bites, does not inject venom in 20% of bites
- coastal SE and south Georgia
- local intense pain in minutes, metallic taste, diaphoresis, NV, perioral numbness
- Skin: erythema to vesicles and ecchymosis
- Systemic: bleeding, seizure, shock, renal failure

**Management for Rattlesnake:**
ABCs, IVF prn
Labs: CBC, UA, PT/PTT
wound care, tetanus, antibiotics if severe tissue involvement
pain control

determine severity:
mild = local findings
moderate = spreading local findings / mild systemic symptoms / mod. lab abn.
severe = severe systemic reaction / significant lab changes

Antivenin within 4 hours (no later than 12 - 24 hrs.) - may repeat every 2 hours

   Mild = 5 vials       Moderate = 10 vials       Severe = 15 vials
- increase dose in children by 50%
- mod./severe: follow serial CBCs, coags

No suction, incisions, turniquots or ice

b) Copperhead

   - most common pit viper but least venomous, not aggressive
   - copper head with brown hourglass designs
   - minimal local and systemic reactions
   - antivenin only if moderate envenomation
   - conservative management

c) Cottonmouth (water moccasin)

   - prefers swamps and lakes, belligerent
   - white buccal mucosa with a dark head
   - intermediate severity between copperhead and rattler
   - treat with antivenin (same management as rattlesnake)

d) Eastern Coral

   - only 1% of bites but fatalities in 9% of cases (neurotoxin)
   - round eyes, no pits, no fangs
   - differentiate from the nonvenomous King snake by Red on Yellow Kill a Fellow
   - weakness, fasiculations, paralysis, ptosis, respiratory depression
   - antivenin - high risk for serum sickness

4) Spiders
1) **Black widow** (*latrodectus mactans*)

- female, red hourglass on belly, most venomous in summer,
- found under woodpiles, cardboard, tin cups
- 5% fatality rate in children
- local symptoms unremarkable
- local muscular pain >> chest or abdominal pain >> generalized pain, NV, HA, HTN, tachycardia
  - antivenin (1 vial) in children < 40kg or severe HTN
    - Calcium for muscle spasms, benzos, tetanus

2) **Brown recluse** (*loxosceles reclusa*)

- brown violin marking on back of head, 3 eyes, hides in clothing / closets
- skin or systemic involvement or both
- Derm: papule >> hemorrhagic vesicle day 2 >> eschar
- Systemic reaction (25%): fever, chills, emesis, myalgia, DIC
- supportive care, no antivenin, steroids ?, no bite excision until 6 week
- **Dapsone** - no controlled studies, inhibits migration of leukocytes into the envenomation site to decrease release of cytotoxic enzymes
  - SE: anemia, methemoglobinemia

5) **Jellyfish** (*Portugese Man of War*)

- mild dermatitis to severe systemic reaction within minutes to hours
- Systemic: NV, diarrhea, ataxia, paralysis, bronchospasm, myalgias, hypotension
- remove tentacles (not with hands), sea water rinse / vinegar / meat tenderizer

6) **Household Poisonings**

a) **Hydrocarbons**

- aliphatics: gasoline, charcoal lighter fluid, turpentine, paints
- low viscosity thus high aspiration risk >> pneumonitis, CNS depression
- supportive care, no decontamination
- if asymptomatic at 6 hours >> discharge home
b) **Organophosphate insecticides**

- Ant and Roach killers (Raid)
- acetylcholinesterase inhibitor >> increases acetylcholine
- muscarinic effects: miosis, bradycardia, SLUDGE
- nicotinic effects: cramps, fasiculations, HTN, tachycardia
- CNS depression
- Treatment: decontamination

  - **atropine** (reverses muscarinic and CNS effects)
  - drying of secretions effective endpoint

  - **pralidoxime** (2PAM) - reverses nicotinic effects, reactivates enzyme

c) **Insect repellants (DEET)**

- DEET is Dethyltoluamide
- absorbed by dermal or oral route
- Deep Woods Off = 20% DEET in spray, 100% in liquid
- as little as 10% DEET can be harmful to children
- Dermatologic: urticaria to generalized edema
- Neurologic: confusion, ataxia >> **encephalopathy**
  - acute or chronic exposure (2 - 90 days in case reports)
- treat: supportive, multiple dose charcoal (enterohepatic circulation)

d) **Chlorine**

- tabs or powder, no harm if mixed correctly for pool use
- **chlorine gas** released by:
  1) bleach + acidic cleaning solution
  2) pool disinfectants (70% Ca hypochlorite) comes into contact with heat / liquid beverages

  - inhalation: dyspnea, wheezing, pulmonary edema (may be delayed)
  - ocular: lacrimation, abrasions
  - ingestion: **coagulation necrosis** - gastritis, dysphagia, ulcers, strictures

Management: remove from source
  - irrigate eyes, skin / no gut decontamination
  - oxygen, aerosols prn, ? nebulized Na bicarbonate