GI/renal/liver compromised

- Xylitol
  - Mechanism of toxicity
    - Converted to intermediary of pentose phosphate pathway → hypoglycaemia
    - Hepatotoxicity, cause unknown → suspect ATP depletion or ↑ generation of O2 spp
    - Causes a massive insulin surge → hypoglycaemia within 30-60 mins of ingestion
    - Movement of insulin/glucose → hypokalaemia possible
    - Toxic dose: >0.1mg/kg hypoglycaemia; 0.5mg/kg: hepatotoxicity
  - Clinical signs
    - Lethargy, collapse, ataxia, seizure (+/- hepatic dysfunction → +/- coagulopathy)
  - Diagnostics
    - CBC + biochemistry: hepatopathy, hypoglycaemia
  - Treatment
    - Decontamination (emesis, gastric lavage)
    - Dextrose/glucose IV, high CHO diet, K supplement if needed
    - Liver protectants
    - If coagulopathy, consider FFP and vitamin K1
- Alcohol
  - Mechanism of toxicity: rapidly absorbed from the GI tract
    - Form into acetate → ↑ CO2 production → metabolic acidosis
    - Interferes w ion transport at axonal cell membranes
    - Binds to GABA receptors, inhibits NMDA receptors
    - Suppresses release of anti-diuretic hormone
  - Clinical signs: drunk animals
    - Metabolic acidosis: ↑ CO2 production
    - Hypothermia: suppress neurological function
    - Poor breathing: suppress respiratory centre
  - Treatment: supportive/symptomatic care (anti-nausea, fluid therapy, warming)
- Ethylene Glycol
  - Mechanism of toxicity
    - Metabolised to alcohol dehydrogenase, glycoaldehyde, glycolate, glycoxylate that are all toxic with oxalate: binds with calcium → hypocalcaemia
    - Metabolised to many metabolites that are toxic to kidneys, brain and GIT
    - Toxic dose: 6.6ml/kg dog; 1.5ml/kg in cats
  - Clinical signs: neuro, GI, renal, acidosis
    - Stage 1 (30min -12h): drunk, GI irritation, high EG blood conc., nausea, vomiting, ataxia, knuckling, muscle fasciculations, ↓ withdrawals, hypothermia, PU/PD.
    - Stage 2 (12-24h): pulmonary oedema, mental dullness, anorexia, tachycardia, tachypnoea, hyperventilation, profound acidosis
    - Stage 3 (24-72h): renal failure, anuria, crystalluria, seizure, coma
  - Diagnostics
    - Initially high anion gap metabolic acidosis
    - Isosthenuria by 3 hours and calcium oxalate crystals in urine by 6 hours
    - Serum EG levels can be run
    - Ultrasound → halo sign at bladder
  - Treatment
    - Decontamination: rapidly absorbed → gastric lavage (emetic ☹ for liquid)
    - Prevent ethylene glycol oxidation by alcohol dehydrogenase: give alcohol which ties up alcohol dehydrogenase (higher affinity) for at least 48 hrs
    - IV fluid
    - Better prognosis if treatment started within 8-12 hrs in dogs, and within 3 hrs in cats

Diseases	General information and Clinical signs	Diagnosis	Treatment and Prognosis

Bronchitis	Clinical signs
	- Coughing (loud, harsh in dogs), episodic respiratory distress (esp cats)
	- Tachypnoea, respiratory distresses
	- ↑ expiratory effort
	- Wheezes or crackles
	
	Prognosis
	- Non-curative, requires commitment
	- Cats w acute asthma attack: risk for sudden death
		Exclude heart disease (distress)
		- ProBNP, Troponins, POCUS (heart La:Ao)
		
		CBC/biochemistry (dog = normal)
		- Cats: +/- peripheral eosinophilia, stress leukogram, hyperglobulinaemia
		
		Other blood tests
		- Heartworm antigen
		- Faecal: *Aelurostrongylus abstrusus, Toxocara cati*
		
		Radiographs
		- Bronchial wall thickening
		- Donuts and tram-tracks
		- Broncho-interstitial pattern
		- Air trapping
		- Rule out other cause of cough
		
		CT
		- Bronchial wall thickening
		- Patchy alveolar patterns
		- Bronchiectasis
		
		Bronchoscopy
		- Irregular mucosa surfaces
		- Hyperaemia
		- Excessive, sticky mucous in airway
		- Collection of BAL fluid
		  - Hyperplasia of epithelial cells
		  - ↑ neutro, goblet cell, macrophage
		
		Ultrasound: exclude pleural effusion
		- Isolated peripheral lesion
		
		Fluoroscopy: rule out other causes e.g. tracheal, large airway collapse
			Principles
			- Remove irritants (allergens, smoke, perfumes…) + improve air quality
			- Maintain airway hydration to facilitate mucociliary clearance (vaporiser, steamy bathroom, nebulise saline)
			- Lose weight
			- Dental prophylaxis
			- Anxiolysis for stressed dogs
			- Use harness rather than collar

	Canine Chronic Bronchitis
	- Cough most days of ≥ 2 mths, X other cause
	- Long term inflammation (fibrosis, epithelial hyperplasia, glandular hypertrophy, inflammatory infiltrates) but can be acutely
	- Excessive mucous in airways → obstruction
	- Middle aged to older small breed dogs (terriers, poodles, cocker spaniels)
	- x systemic signs , can get exercise intolerance
	- +/- 2° bacterial infection, tracheobronchomalacia, pulmonary hypertension and bronchiectasis
	- Unchecked inflam → bronchiectasis (end stage)
			Medical management
			- Prednisolone 0.5-1mg/kg BID, taper to lowest effective dose or fluticasone (inhaled – via spacer)
			- Bronchodilators: terbutaline/ albuterol
			- Mucolytics: N-acetyl-cysteine
			- +/- treat 2° bacterial infections
			- Cough suppressants (Codeine)
			  - Sparingly, if issues sleeping
			- If secondary bronchopneumonia
			  - Antibiotics guided by C&S
			  - x C&S: doxycycline/ azithromycin

	Feline bronchitis - Cats more prone to bronchoconstriction - ↑ mucous production + inflammation - Bronchial asthma: reversible airway obstruction primarily from bronchoconstriction, hypertrophy of smooth m + eosinophilic inflammation - Acute bronchitis: reverse airway inflammation of short duration - Neutrophilic/ macrophagic inflammation - Chronic bronchitis: >2-3 mths, fibrosis, neut/eosin or mixed inflame, isolation of bacteria or mycoplasma - Emphysema: destruction → enlarge peripheral air spaces. May see bullae		Emergency Stabilisation - Oxygen ± sedation - Bronchodilator (terbutaline IV), rapid acting GCS ± albuterol inhaler Medical management - Prednisolone 0.5-1mg/kg BID, then taper to lowest effective dose; OR fluticasone (inhaled – via spacer) - Bronchodilators: theophylline, aminophylline, terbutaline or albuterol - +/- treat 2° bacterial infections - Cough suppressants - sparingly