

# Primary Care Topics in the Emergency Department



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# Objectives

- ▶ Discuss common issues in the Emergency Department setting that providers see with no guarantee follow up
- ▶ After participating in this lecture, the physician will be able to identify interstitial cystitis and provide initial management and referral for their patients.
- ▶ Discuss the difference between intestinal cystitis and urinary tract infection
- ▶ Management of essential hypertension in the emergency department
- ▶ Management of complications from arising diabetic medications

# Disclosure and Contact Information

- ▶ I have no conflict of interest that exists for myself or my family
- ▶ Contact information
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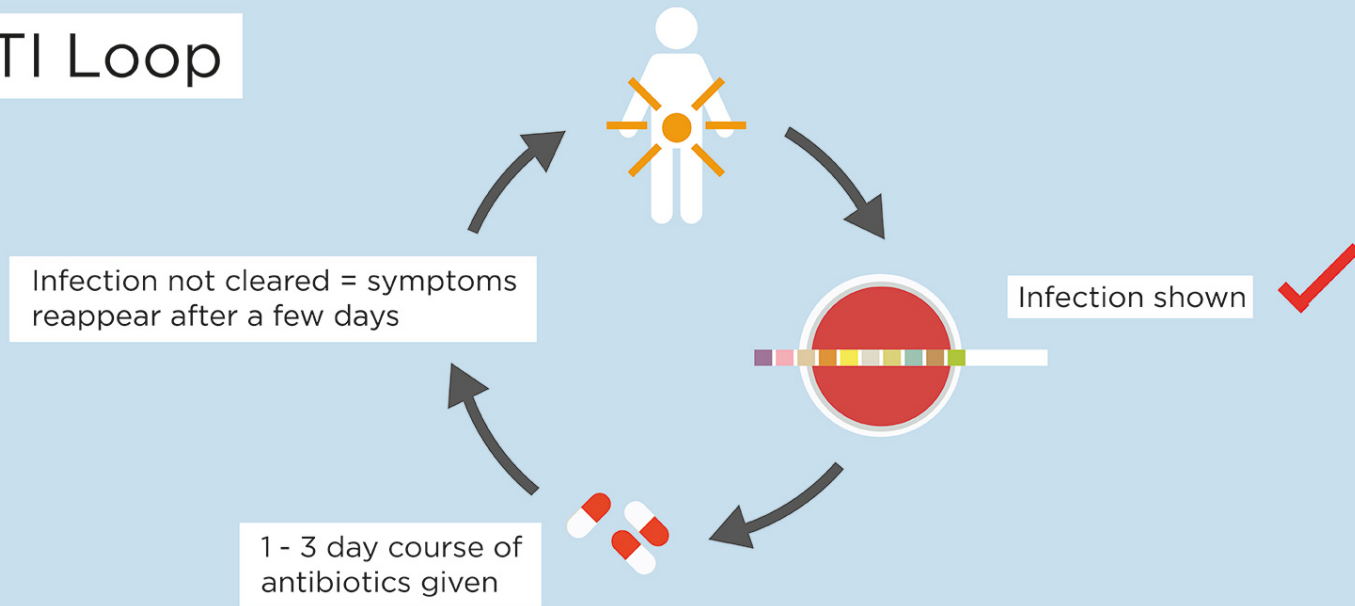
# Acute Cystitis

- ▶ Urinary tract infections (UTIs) is an infection of the bladder/lower urinary tract.
  - ▶ The pathogenesis of UTI begins with colonization of urethral meatus and ascends into the urethra into the bladder
- ▶ Typical presentation includes
  - ▶ Dysuria, urinary frequency, urgency, suprapubic pain, and/or hematuria.
- ▶ Diagnosed with a urine analysis
- ▶ Treat with empiric antibiotics and await cultures for sensitivity if possible

# Endless Cycle



## The UTI Loop

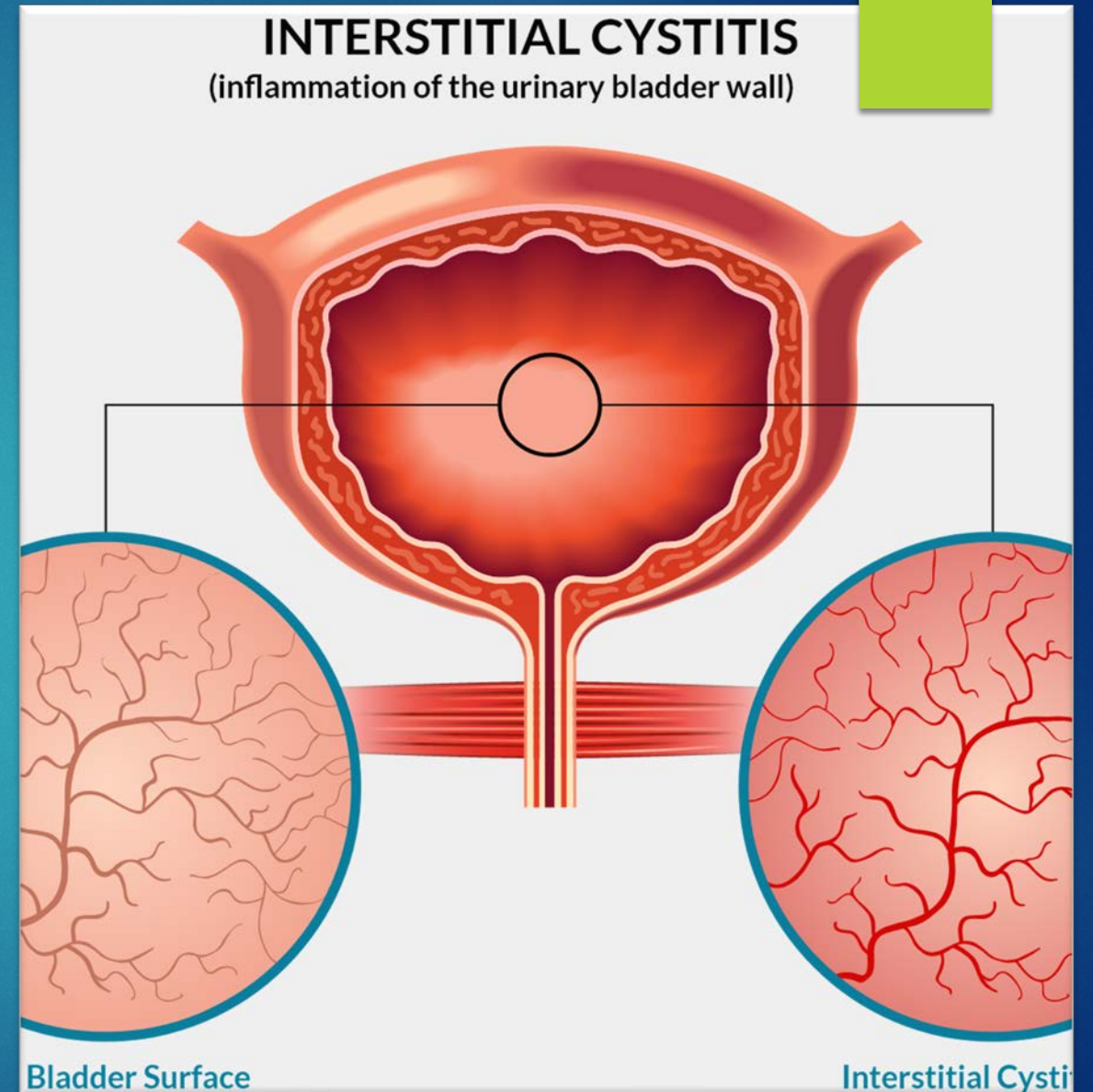


## SPECIMEN VALIDITY TESTING

REPORTED PRESCRIPTION	TEST OUTCOME	MEASURED RESULT	UNITS	REFERENCE RANGE
pH	Normal	6	pH	5 - 9
Specific Gravity	Normal	1.015		1.000 - 1.060
Glucose	Normal	0	mg/dL	<20 (Max > 500)
Protein	Normal	0	mg/dL	<20 (Max > 500)
Bilirubin	Normal	0	mg/dL	<1.80 (Max > 4.00)
Urobilinogen	Normal	0	mg/dL	<1.60 (Max > 4.00)
Blood	Normal	0	mg/dL	<0.02 (Max > 1.00)
Ketone	Normal	0	mg/dL	<3 (Max > 80)
Nitrite	Normal	Negative	mg/dL	0 - 1 (Max > 1)
Leukocytes	Normal	0	WBCs/uL	15 - 40 (Max > 500)
Ascorbic Acid	Abnormal	0	mg/dL	<17 (Max > 40)
Clarity	Normal	Clear		Clear/ Slightly-Cloudy/ Cloudy/ Turbid
Color	Normal	Yellow		Yellow/ Amber/ Red/ Blue/ Colorless/ Straw

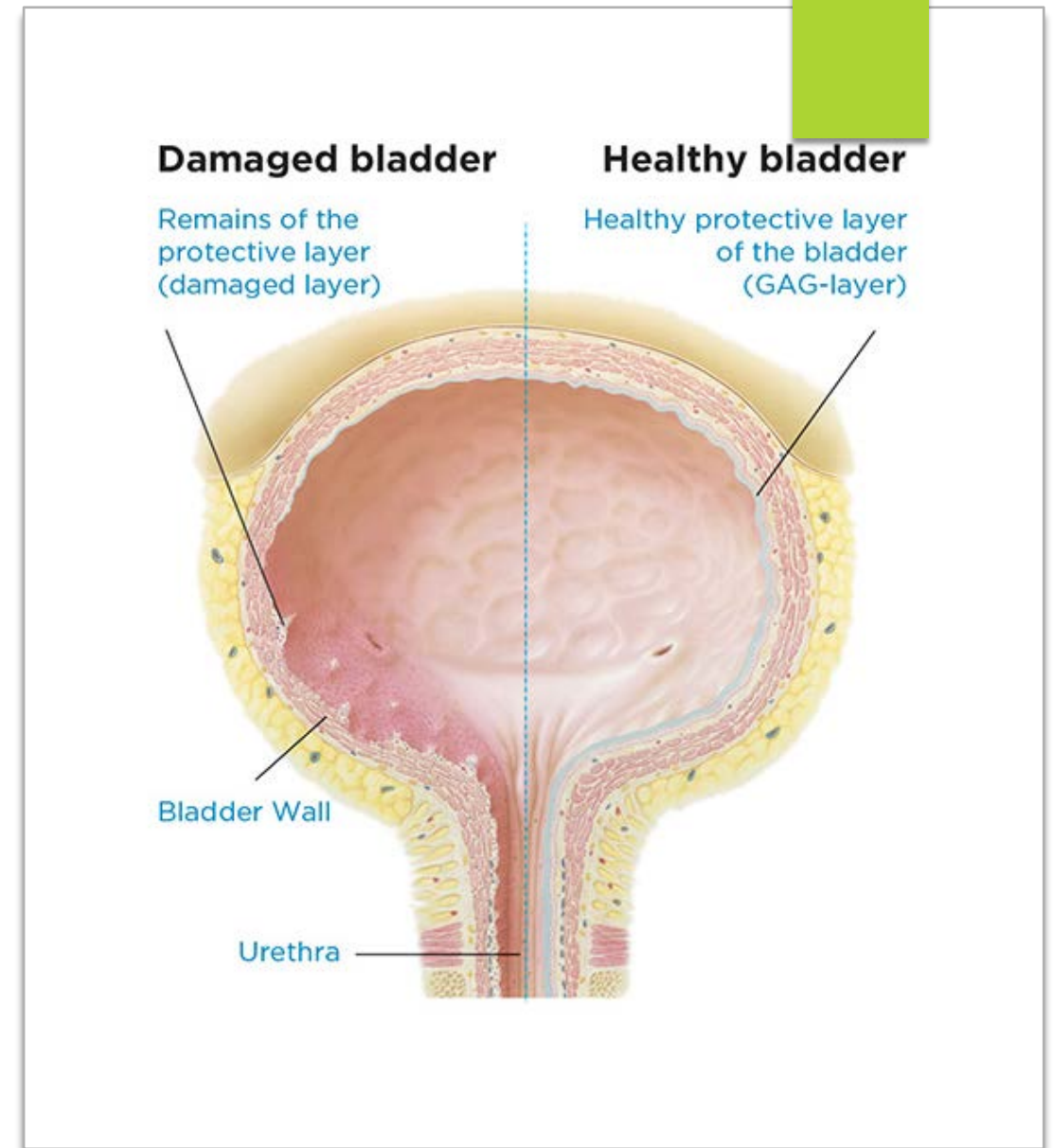
# Interstitial cystitis

- ▶ Interstitial Cystitis (IC): Chronic bladder pain with the absence of an identifiable etiology.
  - ▶ No clear evidence that can cause bladder inflammation.
- ▶ It is an uncommon condition however there may be an underestimation of the prevalence of IC.
- ▶ Typically confused with acute cystitis
  - ▶ An acute urinary tract infection that is presumed to be confined to the bladder.
  - ▶ Infections that lack signs and symptoms beyond the bladder



# Mechanism of IC

- ▶ Not much data of the etiology of IC but possible contributing factors include:
  - ▶ Alteration of the glycosaminoglycan (GAG) layer
    - ▶ The GAG layer of the bladder normally coats the urothelial surface which restricts solutes to diffuse.
    - ▶ Defects of the GAG layer is what is causing a response from the nerves of muscle that causes tissue damage, pain, and hypersensitivity
  - ▶ Due to the nerve alteration and increased activation of the bladder nerves will have sensory neurons during normal bladder filling to result in bladder pain.
    - ▶ It is suspected that the increase visceral sensitivity is secondary to a primary somatic injury that affects the central pathways that overlap with afferent from the bladder





# Evaluation

- ▶ Clinical suspicion
  - ▶ Usually, patients will have the presumption to have an infectious cystitis.
    - ▶ Patient's however show no evidence of an identifiable source for disease
    - ▶ Main goal is to exclude other conditions before identifying IC
      - ▶ Infection, cancer, neurologic conditions, and others

# Treatment



## Amitriptyline as initial treatment of IC or bladder pain syndrome.

Tricyclic antidepressants are believed to have analgesic properties and may also relieve the depressive symptoms associated with chronic pain

- The typical dosage 10mg, 25mg, 50mg, and 75mg (or max dose tolerated)

### Contraindications

- Not to be given with monoamine oxidase inhibitors (MOAi's)



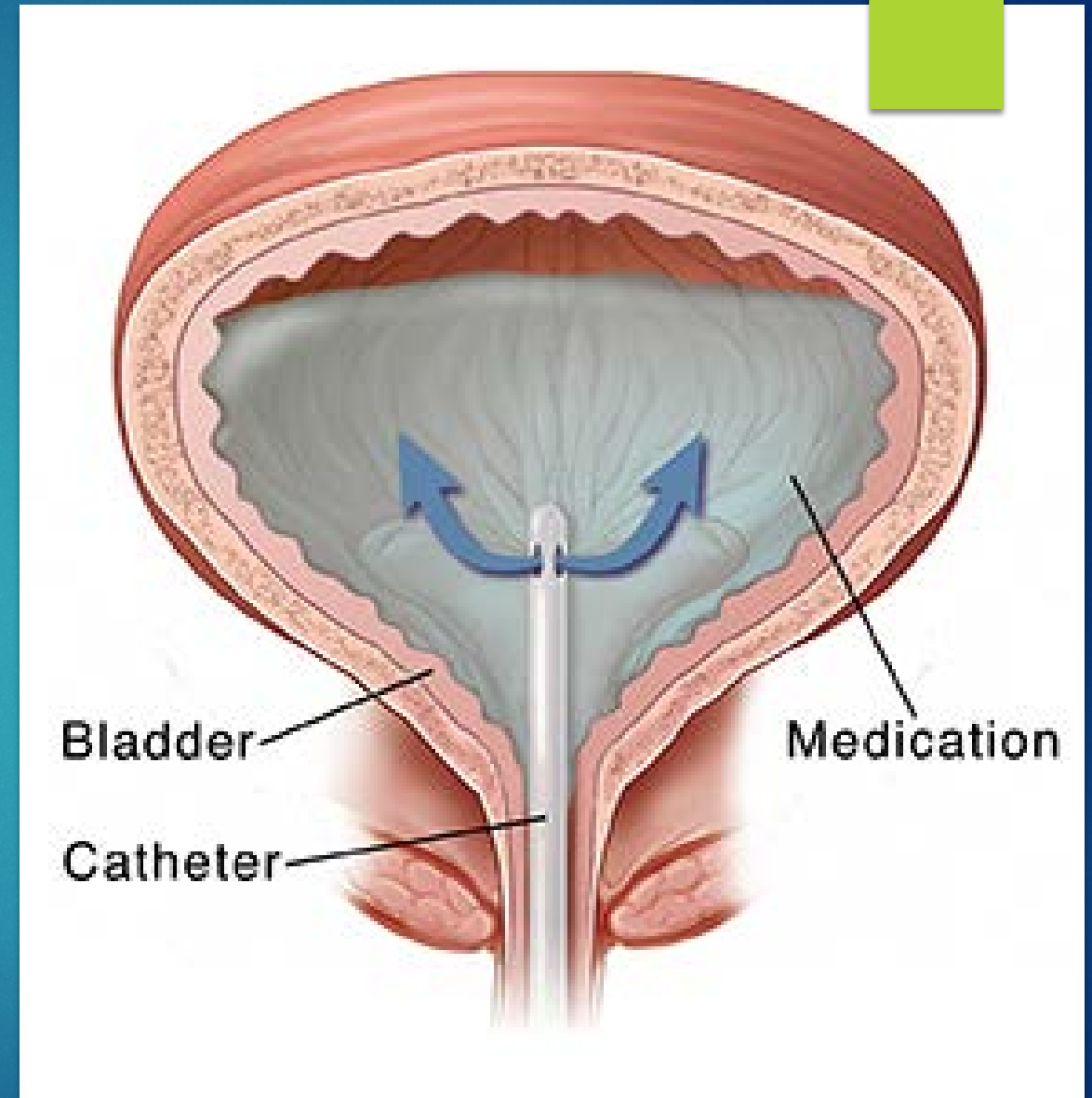
## Pentosan polysulfate sodium

Only oral medication approved by the FDA for treatment of IC/BPS

- Concerns regarding risk of progressive macular eye disease limit its widespread use
- Believed to reconstitute the protective glycosaminoglycan layer over the urothelium

# Treatment to Refractory Symptoms

- ▶ Bladder hydrodistension or intravesical therapies
  - ▶ Hydrodistension
    - ▶ When a cystoscope is used to fill the bladder with water to stretch the bladder wall
      - ▶ Disadvantages: Some patients experience a temporary worsening of their symptoms following the procedure
  - ▶ Intravesical
    - ▶ Used to instill medications directly into the bladder via a urinary catheter
    - ▶ Done once per week for six weeks
    - ▶ Consists of local anesthetics, glycosaminoglycans (heparin), sodium bicarbonate, steroids, and antibiotics



# Osteopathic Manipulation

- ▶ Goal: To relax the pelvic muscles used by the bladder and improve the flow of blood and lymph fluid to the affected region.
  - ▶ Results in easing pain and discomfort
- ▶ Sacral rocking
  - ▶ Performed by placing the heel of the practitioner's hand over the sacrum and by using palpatory skill; rock the sacrum into a position with no restriction
- ▶ Myofascial release
  - ▶ Release will utilize various physical motions to place the patient's lumbosacral region in a position of maximal comfort and tissue release.



# Hypertension

- ▶ Normal blood pressure: Systolic <120mmHg and diastolic < 80mmHg
- ▶ Elevated blood pressure: Systolic 120 to 129mmHG and diastolic < 80mmHG
- ▶ Hypertension:
  - ▶ Stage 1- Systolic 130 to 139 mmHg or diastolic 80 to 89mmHg
  - ▶ Stage 2- Systolic at least 140mmHg or diastolic at least 90mmHg
- ▶ The higher value determines the stage of hypertension if a disparity is present

# Pathogenesis of Primary Hypertension

- ▶ Poorly understood but is most likely the result of numerous genetic and environmental factors that effects the cardiovascular and kidney structure and function.
  - ▶ Risk factors
    - ▶ Age
    - ▶ Obesity
    - ▶ Family history
    - ▶ Race
    - ▶ Sodium intake
    - ▶ Alcohol consumption
    - ▶ Physical activity level
    - ▶ Tobacco use

# Treatment

- ▶ Lifestyle modifications:
  - ▶ Salt restriction
  - ▶ Potassium supplementation preferably by dietary modification
  - ▶ Weight loss
  - ▶ DASH (Dietary Approaches to Stop Hypertension) diet
  - ▶ Exercise

# Pharmacologic therapy

- ▶ Multiple options and multiple first line options
  - ▶ Thiazide type diuretics
  - ▶ Long-acting calcium channel blockers
  - ▶ Angiotensin-converting enzyme (ACE) inhibitors
  - ▶ Angiotensin II receptor blockers (ARBs)
- ▶ Each medication has its ideal indications and has their own side effect profile



# Follow up

- ▶ In the ER setting difficult to anticipate potential side effects and may have a bounce back.
- ▶ Consider initiation treatment with Amlodipine
  - ▶ No dose adjustments for kidney or hepatic impairment
    - ▶ Slow titration is needed however
  - ▶ No contraindications for the geriatric population
  - ▶ Approved to be used in the pediatric population
  - ▶ Only calcium channel blocker that can be used in a patient with heart failure
- ▶ Adverse Reaction
  - ▶ Peripheral edema (SWELLING)

# Diabetes mellitus Type 2

- ▶ Abnormal carbohydrate metabolism that are characterized by hyperglycemia
- ▶ Diagnosis of diabetes
  - ▶ Associated with a relative or absolute impairment in insulin secretion
    - ▶ A1C greater than or equal to 6.5%
    - ▶ Fasting blood glucose greater than or equal to 126
    - ▶ 2- hour plasma glucose greater than or equal to 200
    - ▶ Random plasma glucose greater than or equal to 200

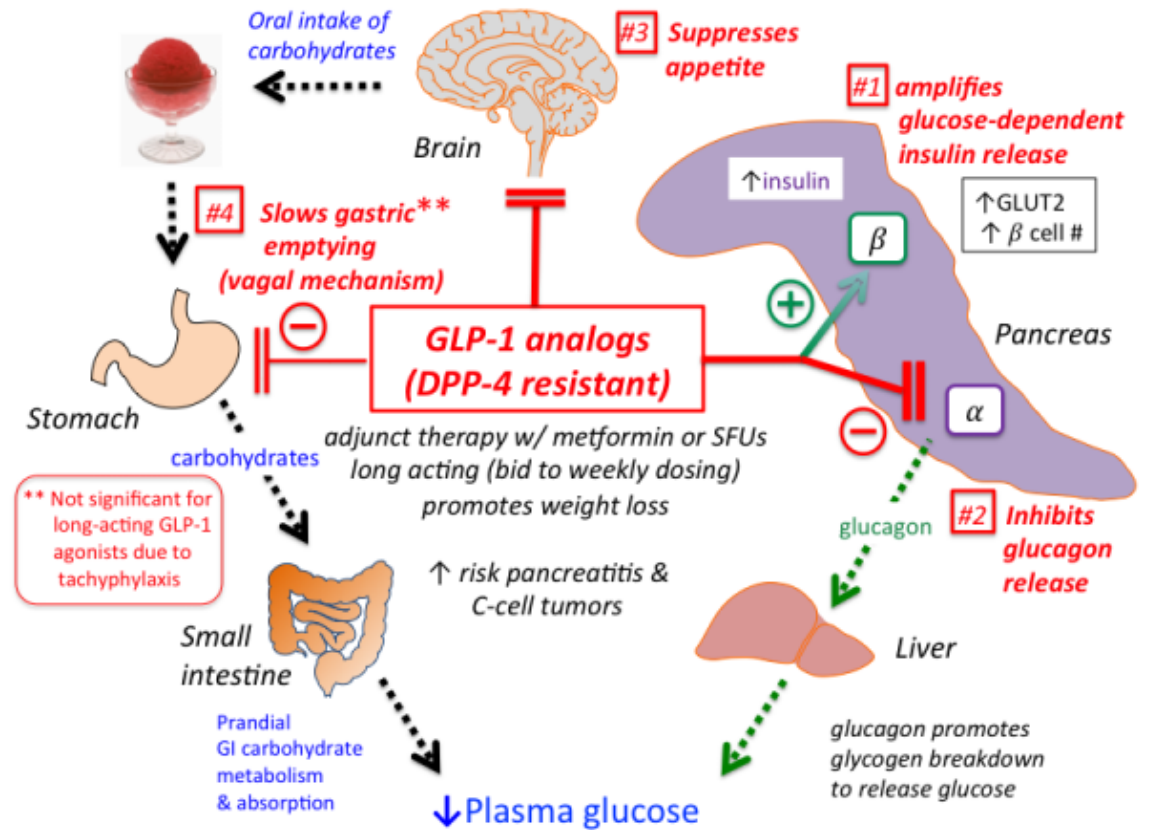
# Treatment of Diabetes Mellitus type 2

- ▶ Initial management
  - ▶ Lifestyle modifications
- ▶ Pharmacological management
  - ▶ Gold standard: Metformin
- ▶ New standards that are being recommended as monotherapy or combination therapy
  - ▶ Glucagon- like peptide-1 (GLP1)

# GLP-1

## ► Mechanism of action

- Increases glucose-dependent insulin secretion, decreases inappropriate glucagon secretion, slows gastric emptying; also plays a role in the brain regarding regulation of appetite and caloric intake.



# Ozempic Dosing Schedule

## START



# Adverse reactions

- ▶ Drug has been sought by multiple patient's regardless of diabetic status
- ▶ Individuals are more susceptible to acute kidney injury
- ▶ Gallbladder/ biliary tract disease
- ▶ Gastrointestinal symptoms
- ▶ Pancreatitis

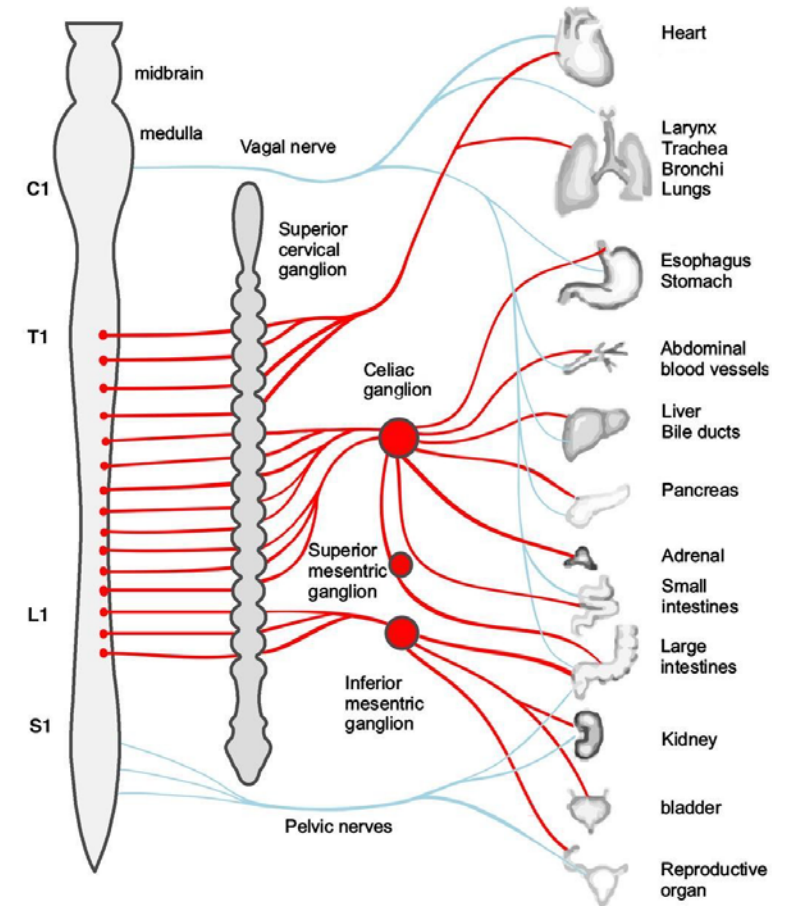
# Right Upper Quadrant Pain

- ▶ GLP-1 have been noted to increase the chance of cholelithiasis and cholecystitis
  - ▶ Animal studies shown that GLP-1 enhance the proliferation and activity of cholangiocytes
  - ▶ Have noticed more around 1mg



# Osteopathic Manipulative Treatment (OMT)

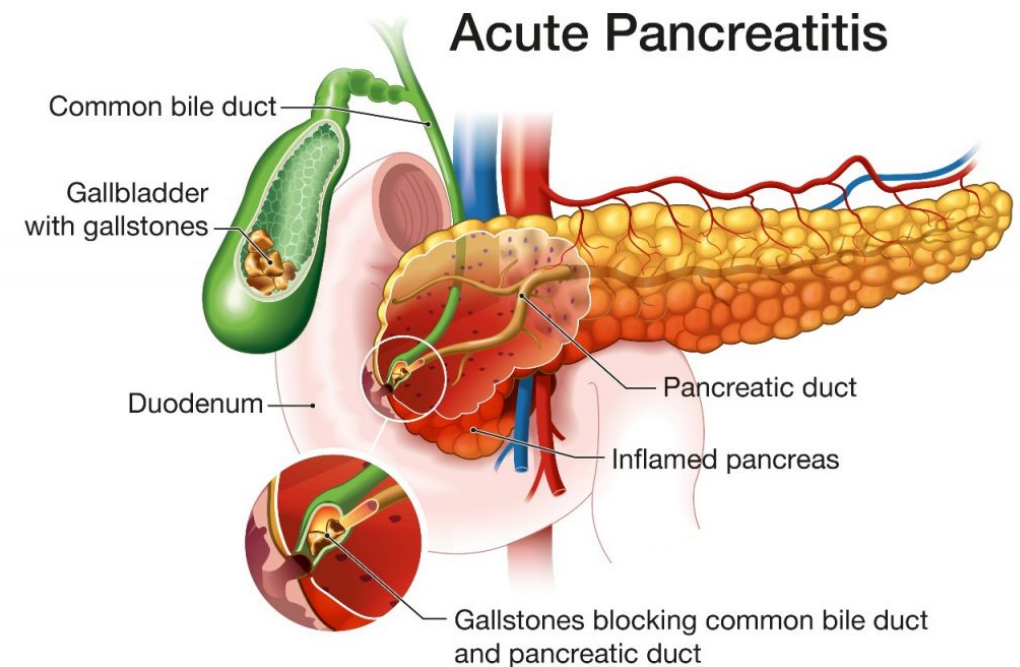
- ▶ OMT can be performed at T6-T9 segments that can help with biliary dyskinesia and colic
  - ▶ Mechanism of action
    - ▶ Removal of the somatic component which will then affect nociceptive facilitation at the spinal level which allows the body to restore autonomic balance.





# Pancreatitis

- ▶ GLP-1 receptor agonists directly stimulate GLP-1 receptors in pancreatic islet beta cells and exocrine duct cells, an overgrowth of cells will occur and then cause covering of small duct. Hyperplasia occurs and increases in pancreatic weight and duct occlusion



# Treatment of Complications

- ▶ Treat the acute issue accordingly
- ▶ Safe to discontinue medication
  - ▶ No titration is required
- ▶ Caution!
  - ▶ Medication has been discontinued but then the patient wants to re-initiate medication.

# Sources

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Questions?