

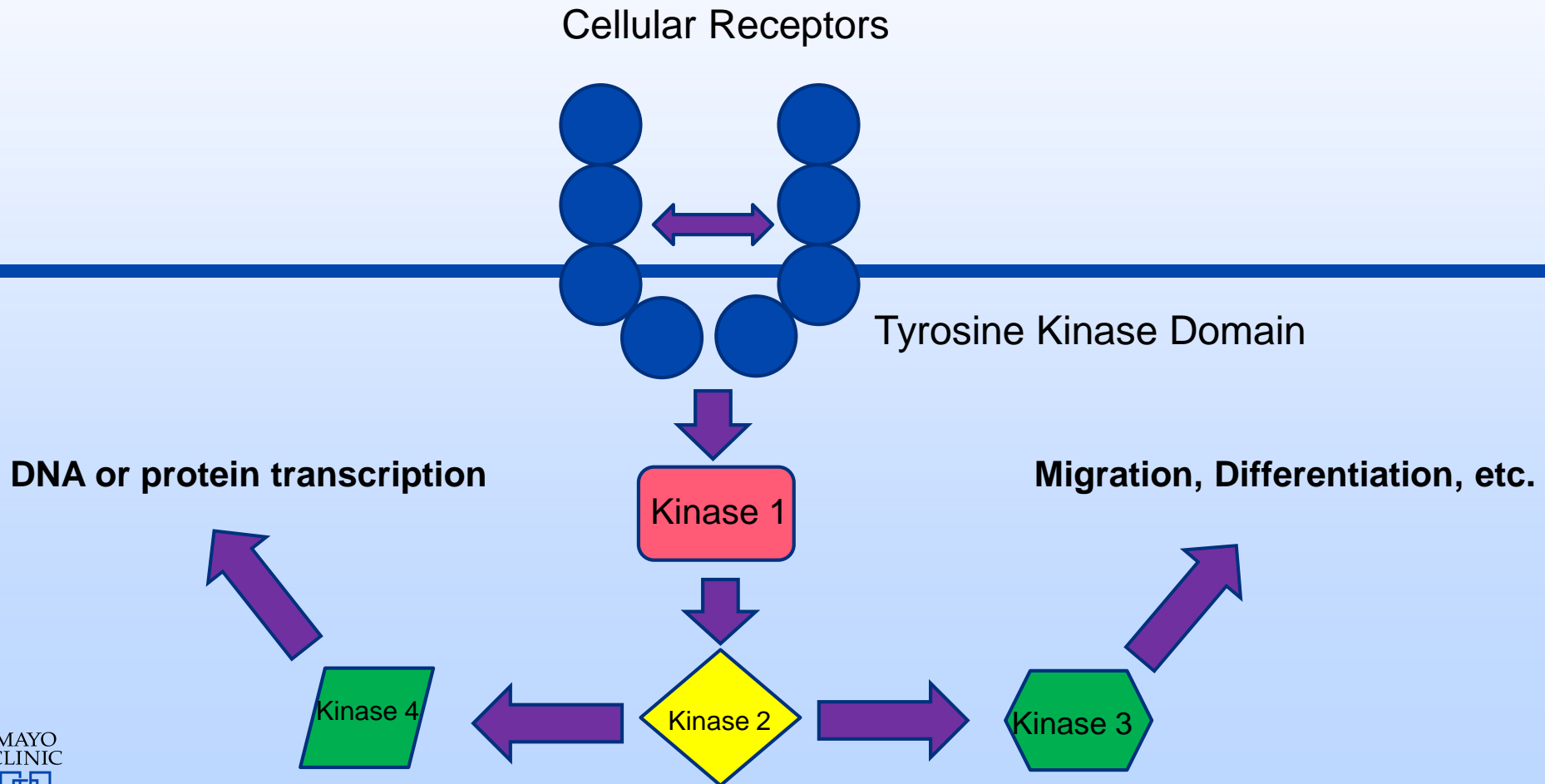


# Management of Drug Side Effects

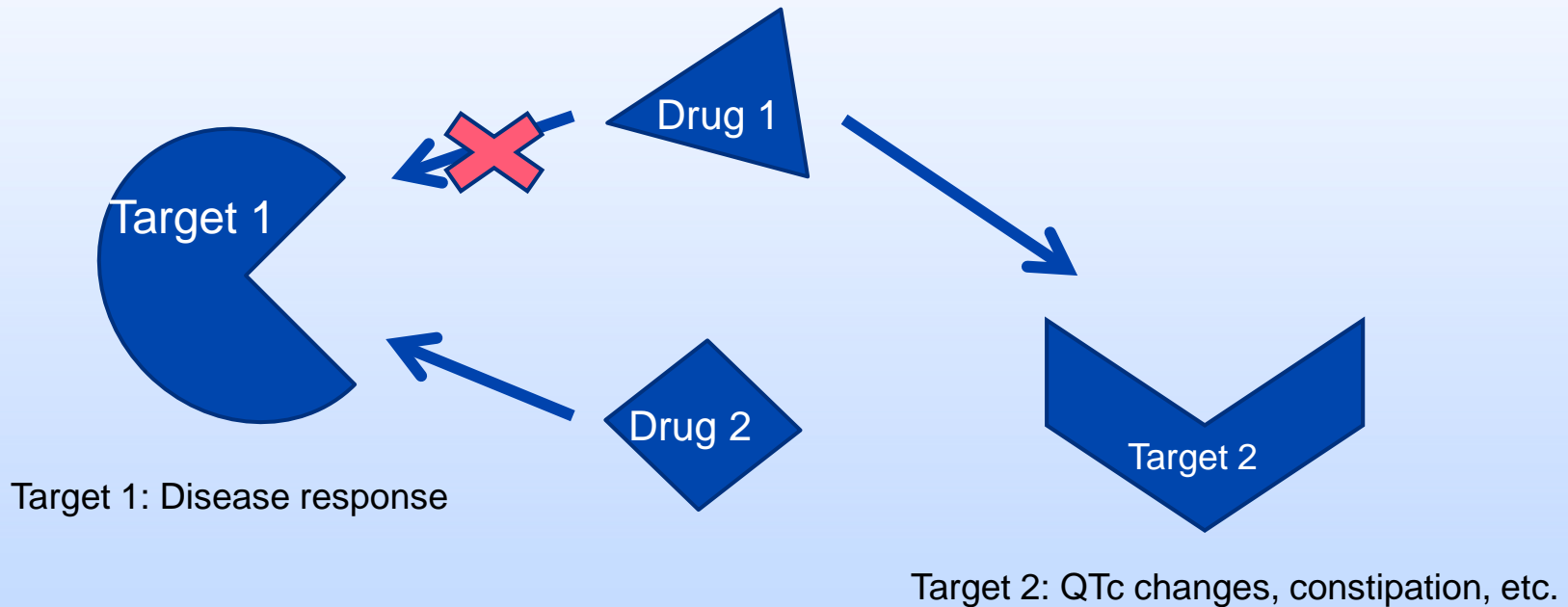
Eric Yancey, Pharm.D  
Instructor in Pharmacy, Mayo Clinic School of Medicine

Gist Day of Learning  
3/10/18

# General Oncology-Pharmacology



# Pharmacology: Drug Side Effects



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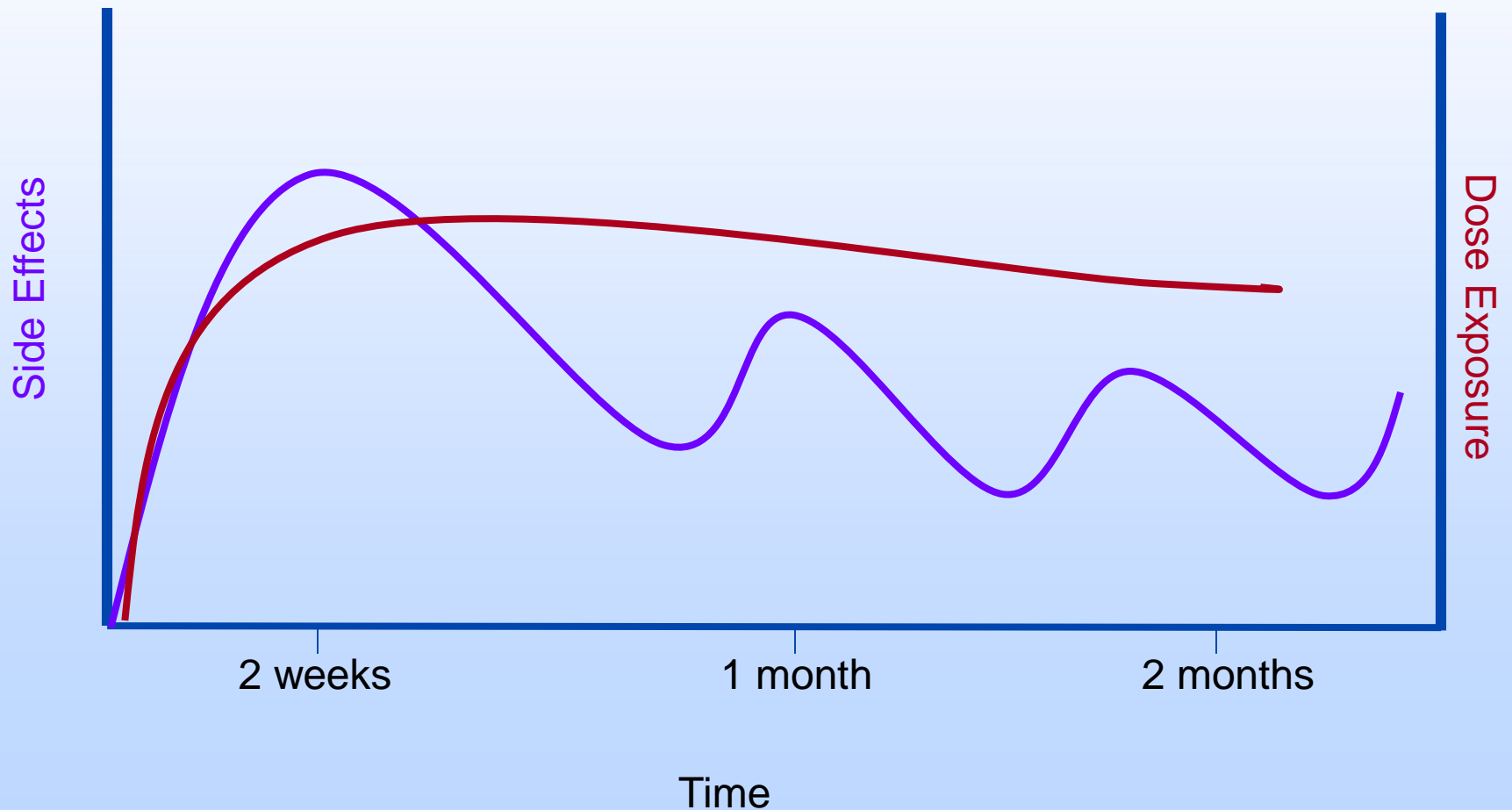
Imatinib (Gleevec®)

# Side Effects

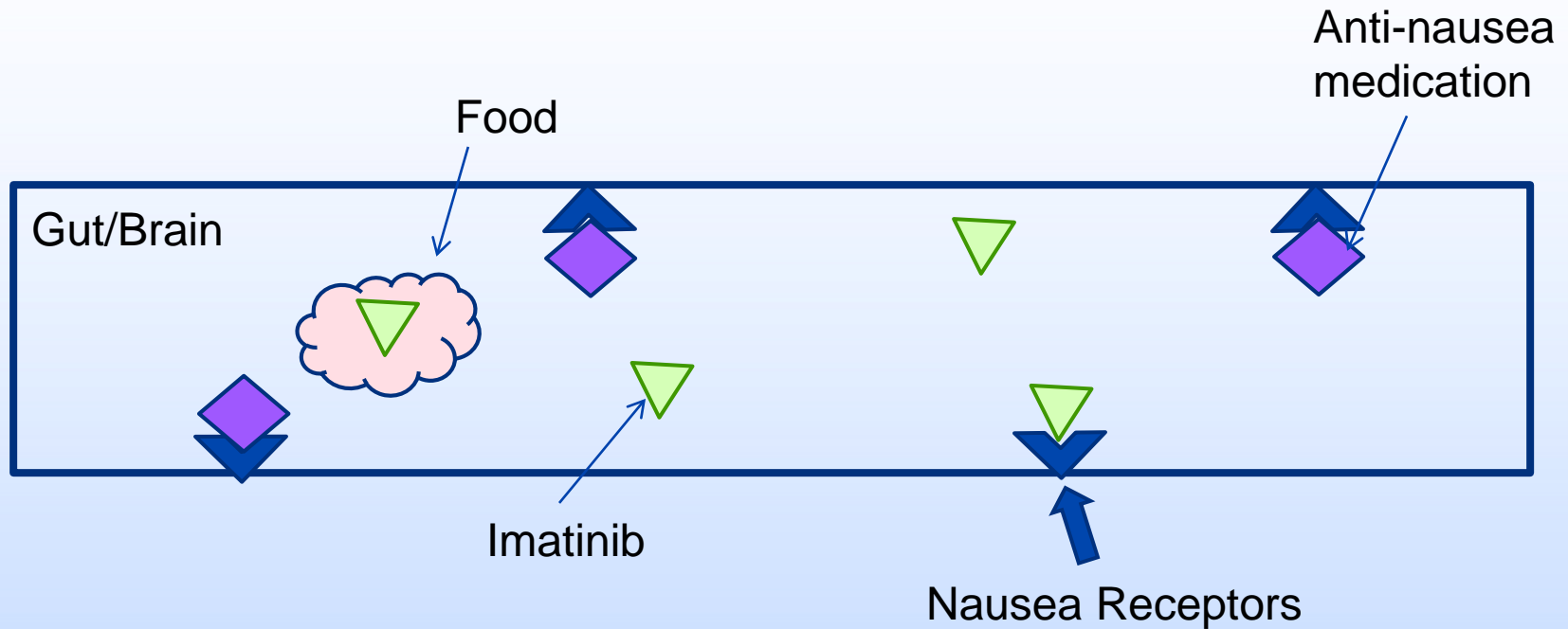
- Fatigue
- Anemia
- **Nausea or vomiting**
- **Diarrhea**
- **Edema/fluid retention**
- **Cramps**
- Endocrine
- **Rash/skin problems**
- Joint pain
- **Eyes**
- Sensitive to sunlight
- Liver toxicity
- Myelotoxicity (blood counts)
- Neurotoxicity

**Side Effects Are Dose Related**

# Side Effect Lineage



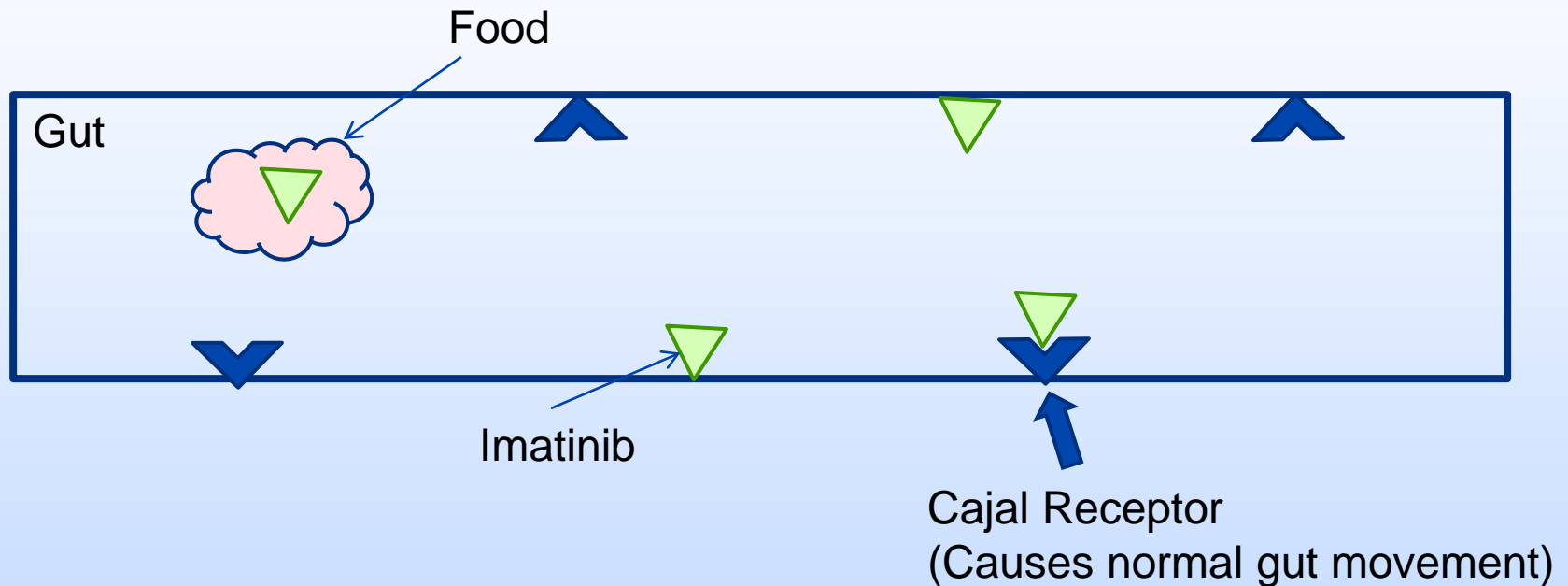
# Nausea/Vomiting



## Pro-Tips:

- Onset: Can happen upon initiation
- Take medication with food and large glass of water
- Take anti-nausea medication (ondansetron/prochlorperazine)
  - Nausea around dose: Take medication 30min prior to dose
  - Nausea throughout day: As needed, scheduled, or different medication

# Diarrhea



## Pro-Tips:

- Onset: Can happen upon initiation
- Take Medication with food and large glass of water
- Antidiarrheal medications



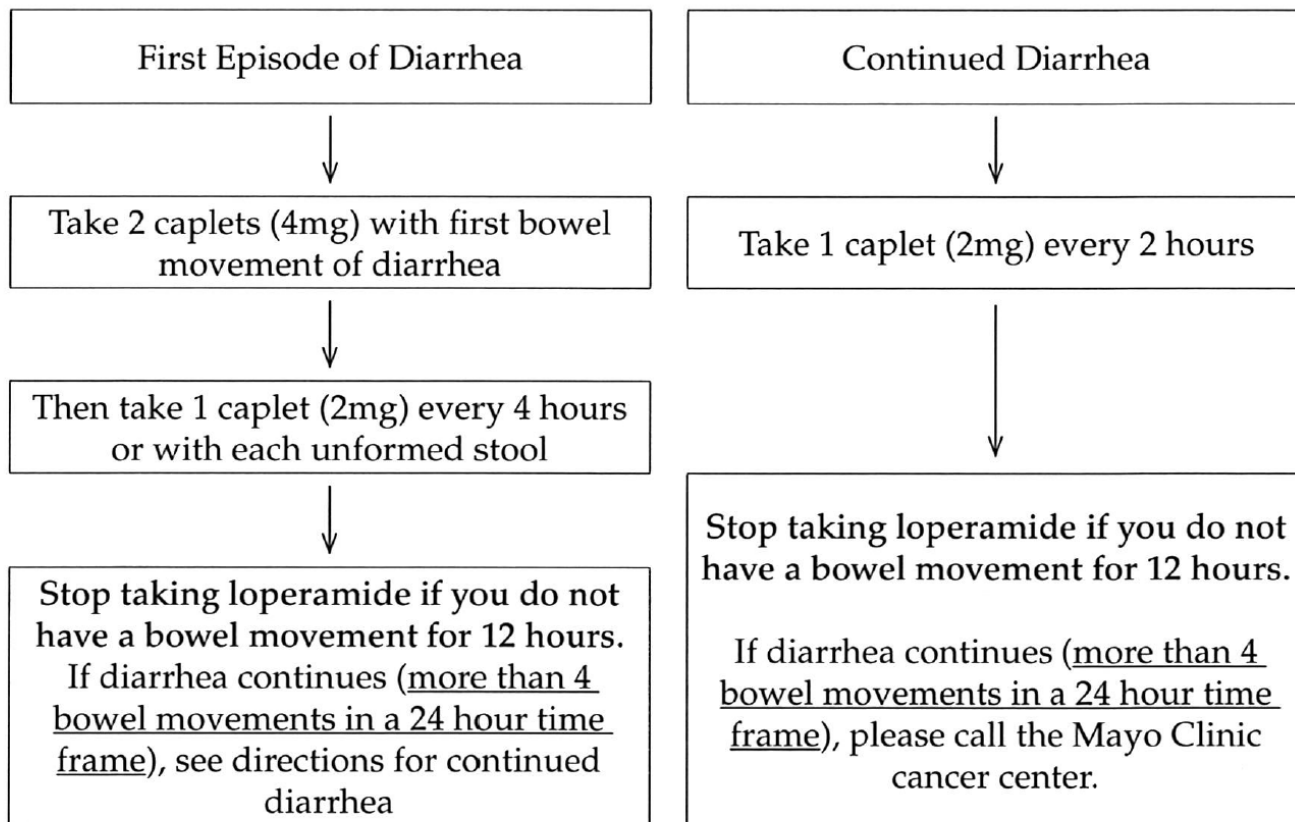
# Diarrhea

Signs that you have diarrhea	Be sure to call Mayo Clinic Cancer Center right away if you have any of these signs
<ul style="list-style-type: none"> <li>• More stools per day than you had before starting chemotherapy</li> <li>• Softer, looser, or more watery stool</li> <li>• Stomach pain or feeling weak</li> <li>• More cramping and/or gas</li> </ul>	<ul style="list-style-type: none"> <li>• Fever (a temperature of 100.5 degrees Fahrenheit or higher)</li> <li>• Flu-like symptoms</li> <li>• Chills, Sweating, Feeling Hot</li> <li>• Severe stomach pain or cramps</li> </ul>

What to Drink	What to Eat
<ul style="list-style-type: none"> <li>• Drink at least 8 to 10 large glasses of fluid a day (water, Gatorade, Pedialyte, clear broth)</li> <li>• Drink a little at a time, continuously throughout the day</li> <li>• Limit fluids at mealtimes to 4 to 6 ounces</li> <li>• Avoid milk or dairy products, alcohol, coffee and very hot or very cold fluids</li> </ul>	<ul style="list-style-type: none"> <li>• Eat small meals frequently</li> <li>• Follow the BRAT diet (Bananas, Rice, Applesauce, Toast)</li> <li>• Avoid fatty or fried foods, spicy foods, high-fiber foods, raw fruits and vegetables, beans, chocolate</li> </ul>

# Diarrhea

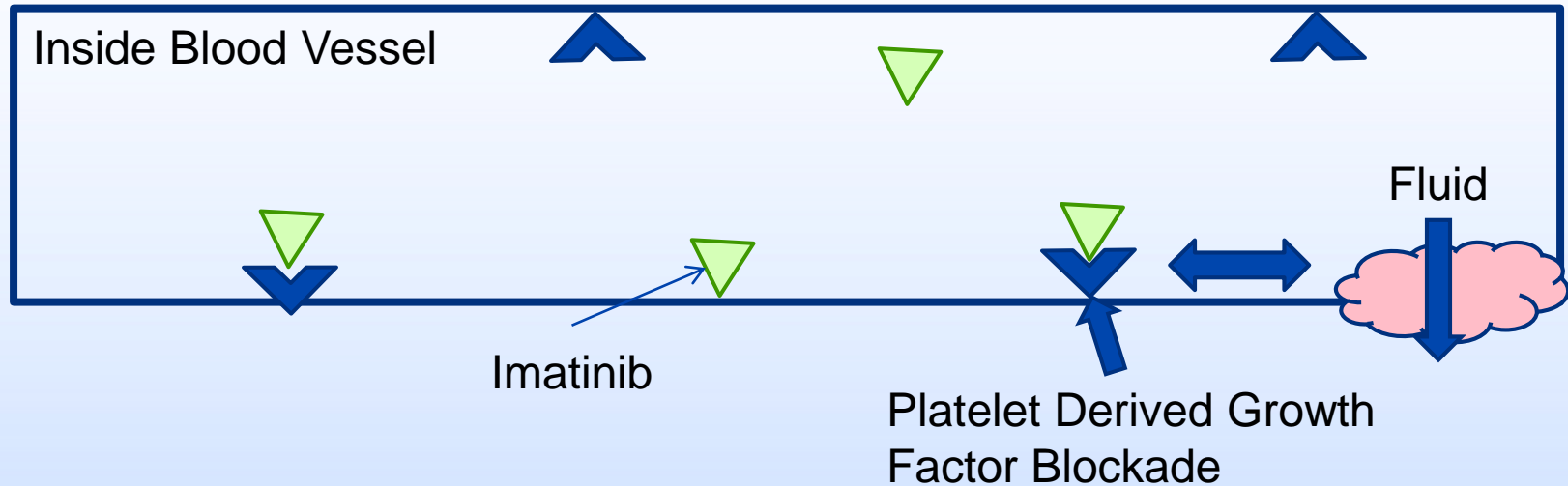
## Taking Medicine for your diarrhea Imodium A-D<sup>®</sup> (Loperamide)



Mayo Clinic Cancer Center: 480-342-4800 or 480-301-8000 (after hours)

# Swelling

Skin



- Edema is typically mild, but up to 50% of people could get swelling
- Found in lower extremities/under eyes → morning more common
- At Risk: Women, >65 years of age, cardiovascular/renal issues
- Timing: >400mg/day: ~ 1 month; ≤ 400mg/day: ~ 2months

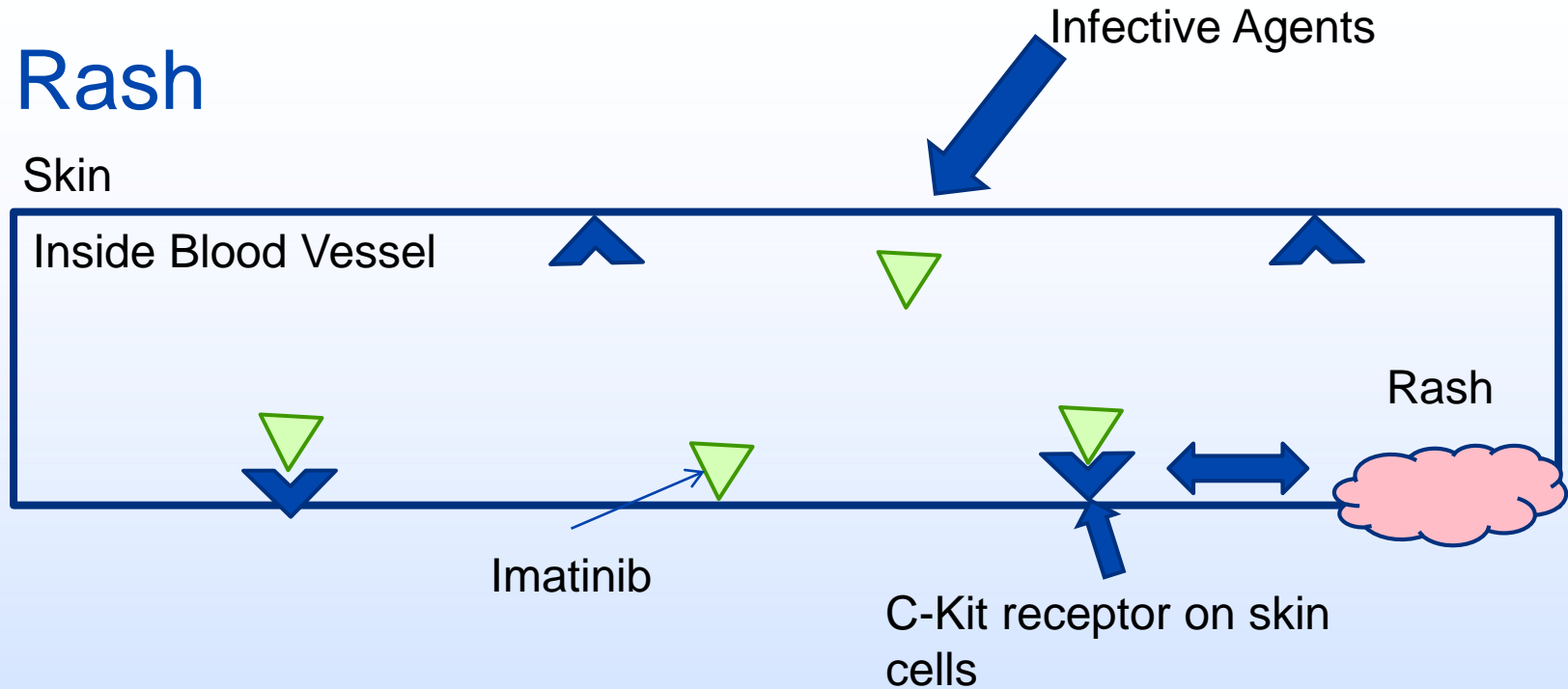
## Pro Tips:

- Ice Pack, topical 1% hydrocortisone or 0.25% phenylephrine (eyes)
- Water Pills (Furosemide), Decrease salt (eyes/feet)
- Be judicious with time on your feet/ prop up feet

The Oncologist 2004; 9:271-281

# Rash

Skin



- Rash can vary in presentation (red/swollen bumps, dry skin, etc.): contact provider
- Location: forearms, trunk, and face (less common)
- At Risk: High doses, women

## Pro Tips:

- Heavy Creams, antihistamines
- Steroids (if creams unresponsive)
- Dose adjustments

# Cramping

- Risk: 25-50% of people can experience cramps
  - Typically mild in presentation
- Location: Thighs, calves, feet, or hands
- Presentation: The cramps should not change pattern, frequency, or severity (if so contact provider). Have consistent triggers
- Cause: Exertion, night-time/sleep, low calcium/magnesium
- Treatment: Tonic water (quinine), calcium/magnesium supplementation, sports drinks, medications (NSAID, muscle relaxants)

# Eyes

- Periorbital swelling (see above)
- Changes in visual acuity:
  - Epiphora (tearing)
    - Cause: Lacrimal duct blockage, overproduction of tears
    - Management: Timing of dose, antihistamine drops
  - Dry eyes:
    - Management: Artificial tears

Bottom Line: If not improving, contact provider.

# Side Effects

- Fatigue
- Anemia
- Nausea or vomiting
- Diarrhea
- Edema/fluid retention
- Cramps
- **Endocrine**
- Rash/skin problems
- Joint pain
- Eyes
- **Sensitive to sunlight**
- **Liver toxicity**
- **Myelotoxicity (blood counts)**
- **Neurotoxicity**

**Side Effects Are Dose Related**

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Sunitinib (Sutent ®)

&

Regorafenib (Stivarga ®)



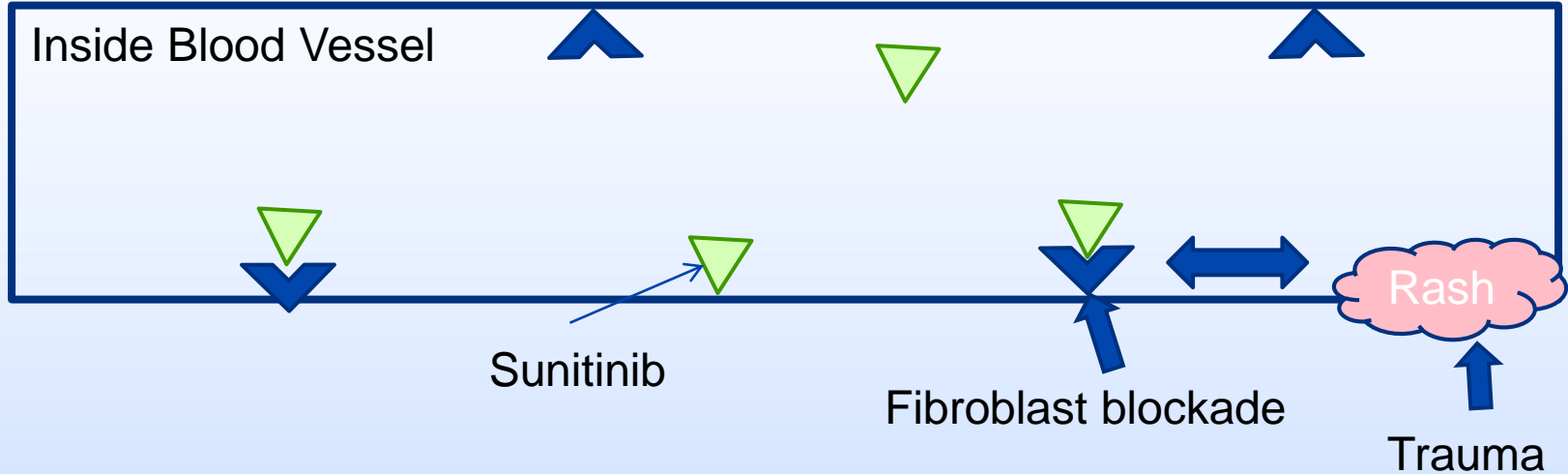
# Side Effects

- Fatigue
- Nausea or vomiting
- Diarrhea
- **Sore Mouth**
- **Rash/skin problems**
- **Hypertension**
- **Voice**
- Myelotoxicity (blood counts)
  - Neutropenia
  - Anemia
  - Thrombocytopenia
- Liver toxicity
- Cardio-toxicity
- Kidney toxicity

**Side Effects Are Dose Related**

# Rash/Skin Problems

## Skin



- Presentation: Pain/redness on palms and soles → lesions
- Location: Heels of feet or joints in hands
- Timing: 2-4 weeks after initiation

### Pro Tips:

- Avoid excess hot water
- Avoid excessive trauma/rigorous exercise in first month
- Avoid tight fitting shoes

# Rash/Skin Problems

## Prophylaxis

- Creams with urea
- Prevention measures

## Grade 1: Minimal skin changes with out pain

- Prescription strength urea +/- steroid creams
- Prevention measure
- Follow up in 2 weeks

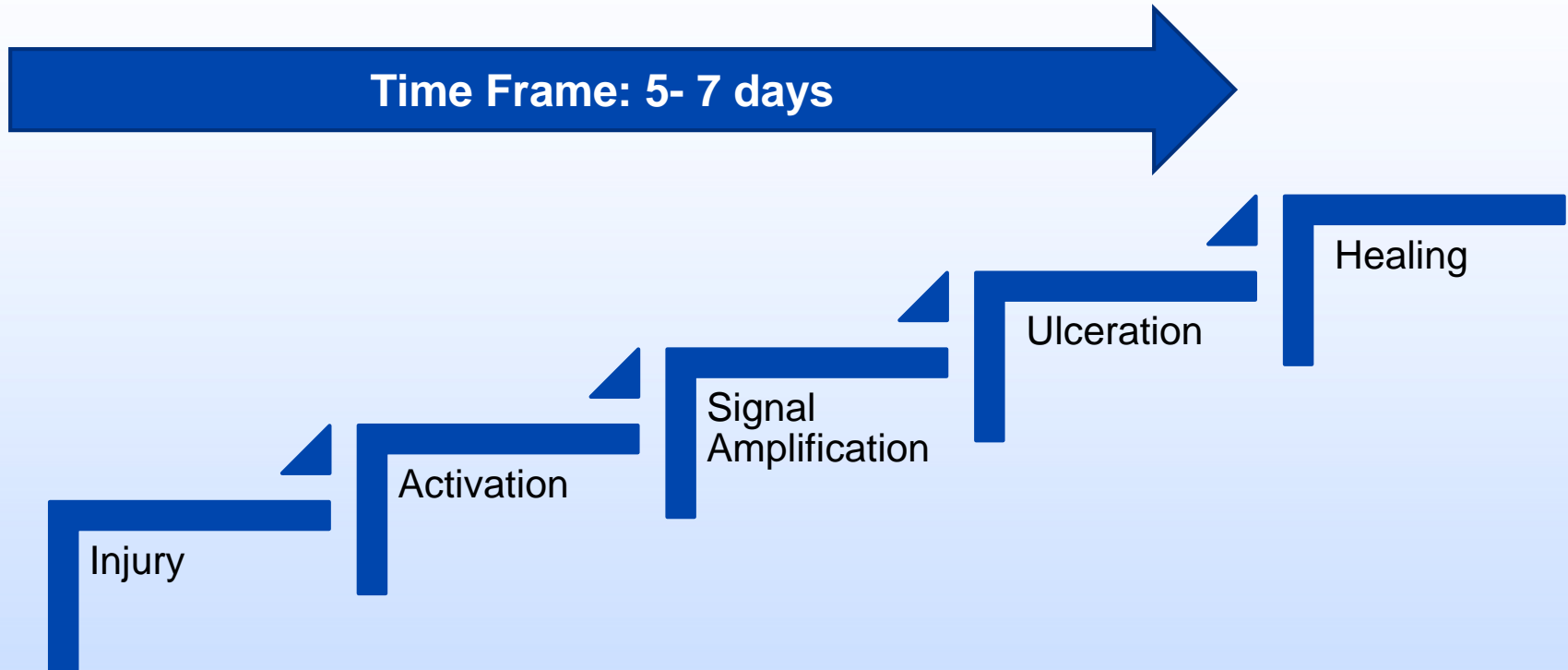
## Grade 2: Skin changes (blisters, cracks, etc) with pain

- Prescription strength urea + steroid creams twice a day
- Prevention measures
- +/- pain medications
- Follow up in 2 weeks

## Grade 3: Severe skin changes (blisters, cracks, etc) with pain

- Prescription steroid creams twice a day
- Prevention measures
- + pain medications
- Follow up in 2 weeks; hold medication

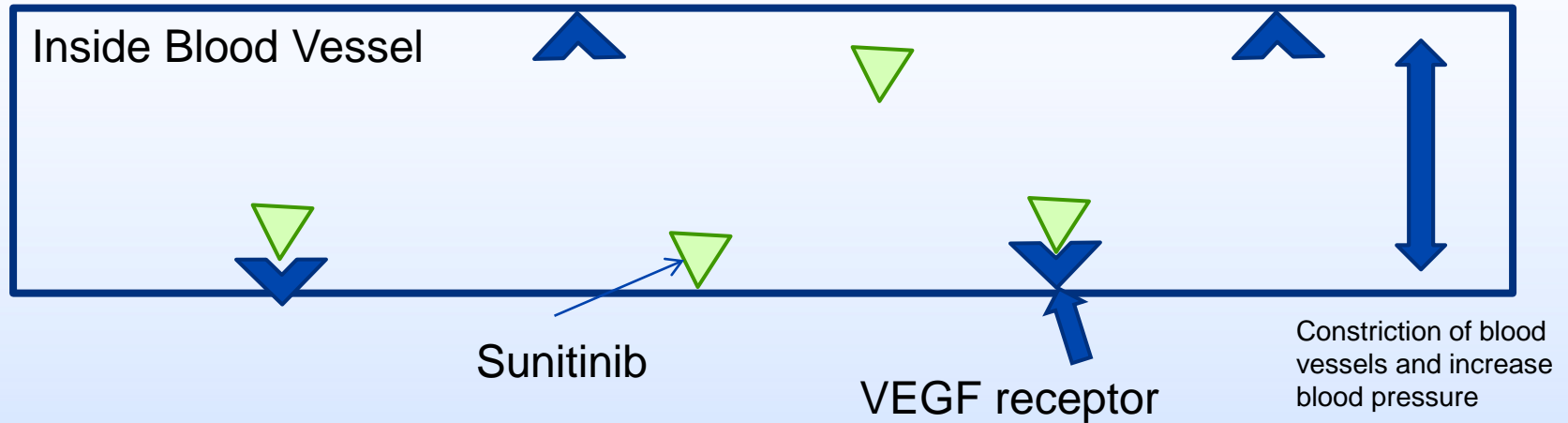
# Sore Mouth: Pathophysiology



# Sore Mouth

- Pro Tips:
  - Prevention:
    - Oral Care
      - Soft tooth brush
      - Saline and/or sodium bicarbonate mouth rinses
  - Treatment:
    - Avoid spicy/acidic/abrasive foods
    - Prescriptions

# Hypertension



- Timing: Early, within 1-6 weeks
- Risk Factors: Pre-existing hypertension, age >60 years, BMI >25 kg/m<sup>2</sup>
- Effect is based on dosing

## Pro Tips:

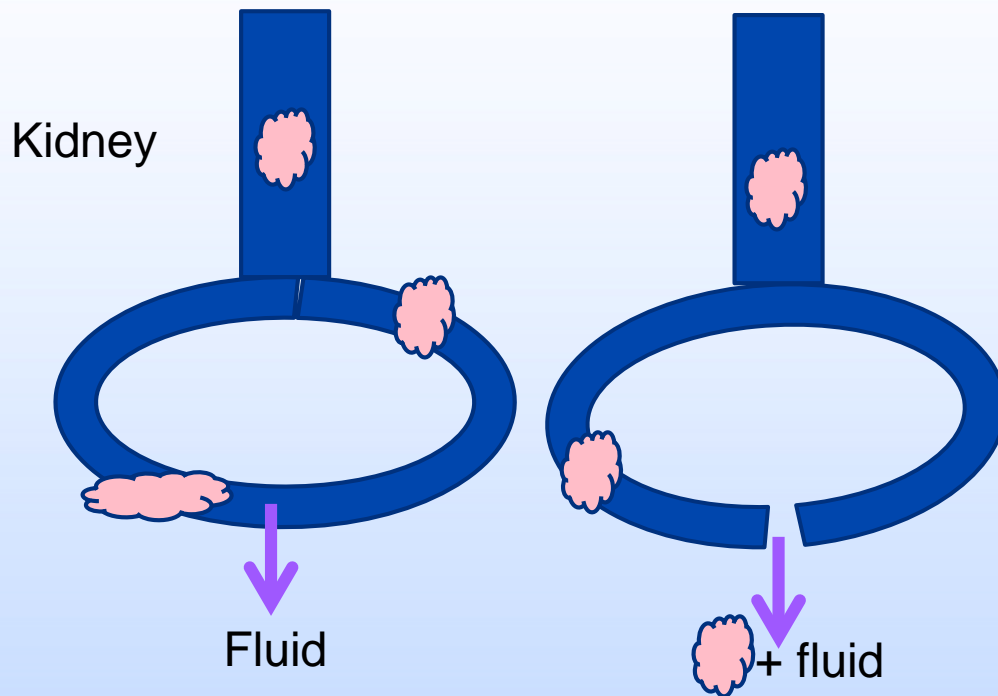
- Monitor blood pressure daily especially in people underlying blood pressure/cardio issues
- Contact provider if blood pressure is consistently  $\geq 130/80$  or rapidly increasing blood pressure

# Side Effects

- Fatigue
- Nausea or vomiting
- Diarrhea
- Sore Mouth
- Rash/skin problems
- Hypertension
- Myelotoxicity (blood counts)
  - Neutropenia
  - Anemia
  - Thrombocytopenia
- **Liver toxicity**
- **Cardio-toxicity**
- **Kidney toxicity**

**Side Effects Are Dose Related**

# Kidney/Liver/Heart Toxicity



- Pro tips:
  - Kidney: Monitor for changes in urine quality
  - Heart: Discuss cardiac medical history
  - Liver: Labs





# Questions & Discussion