

# Acute Pancreatitis

## Clinical Practice Guideline

### Inpatient Management

#### Labs:

- Monitor BUN/creatinine x 48 hours or until full enteral nutrition is established
- Consider monitoring daily Hct and CRP x 48 hours especially in patients with a severe course

#### Imaging\*\*:

- No additional imaging indicated in uncomplicated cases, however CT with IV contrast should be considered if the patient's clinical condition deteriorates or if severity persists

#### Fluid Management:

- Continue 1.5 x maintenance fluids until enteral nutrition is well established

#### Nutrition:

- If hemodynamically stable and there are no contraindications (ileus, bowel obstruction, obstructing choledocholithiasis and hypertriglyceridemia), begin clear liquid diet upon admission and advance to regular age appropriate diet within 6 hours if tolerated (irrespective of pain medication)
- If initiating tube feeds or parenteral nutrition, consult nutrition
- Consider NG tube feeding within 48 hours if unable to advance PO feeds due to pain, intolerance, or poor appetite
- NJ feeding reserved for cases of NG feeding intolerance
- Use standard polymeric formulas (ie, Pediasure)
- Start parenteral nutrition if there are contraindications to enteral nutrition or unable to advance after 5-7 days

#### Pain Management:

- Pain score 0-3- warm compresses, oral acetaminophen
- Pain score 4-7- IV NSAIDs (Ketorolac) if normal renal function and no plans for surgery, and/or oral or IV opioids if unresponsive to NSAIDs (morphine preferred)
- Pain score 8-10- IV opioids (morphine preferred), consider laxative therapy

#### Monitoring

- Strict I/O, urine output per shift
- Vital signs every 4 hours including SpO2 measurement
- Monitor for SIRS and end organ dysfunction (particularly cardiac, renal, and respiratory systems)

### Initial Management

#### Labs:

- CBC
- CMP
- GGT
- Lipase
- Triglycerides
- Consider CRP
- Consider blood gas

#### Imaging\*\*:

- Abdominal ultrasound with particular attention to the pancreas, liver, biliary ducts, kidneys, and presence of ascites

#### Fluid Resuscitation:

- If hemodynamically compromised 20 mL/kg normal saline or lactated ringers bolus
- Re-bolus as needed based on hydration and hemodynamic status
- Begin 1.5 x maintenance fluids with D5NS

#### Nutrition:

- NPO during initial fluid resuscitation

#### Pain Management:

- Pain score 0-3- warm compresses, oral acetaminophen
- Pain score 4-7- IV NSAIDs (Ketorolac) if normal renal function and no plans for surgery, or IV opioids (morphine preferred)
- Pain score 8-10- IV opioids (morphine preferred)

#### Monitoring:

- Vital signs every 2 hours during initial fluid resuscitation

**Consider admission to PICU for moderately severe pancreatitis**

*Discuss with primary team if presence of oncologic disease, cardiac disease, diabetes, kidney disease*

yes

More than 3 fluid boluses required or signs of end organ dysfunction (renal, respiratory, cardiovascular)\*\*\*?

no

**Admit to General Wards**

*Discuss with primary team if presence of oncologic disease, cardiac disease, diabetes, kidney disease*

#### Admitting Service

- Hospitalist service for uncomplicated first episode of mild acute pancreatitis
- GI service for second episode of pancreatitis, moderately severe acute pancreatitis (after discussion with ICU), chronic pancreatitis, and cases with complex fluids collections.
- Surgery service for cholelithiasis or choledocholithiasis, and in cases with pancreatic laceration, fracture or duct disruption

**Patient presents with acute pancreatitis with at least 2 of the following:**

-Abdominal pain compatible with acute pancreatitis\*

-Imaging consistent with pancreatitis

-Amylase or lipase  $\geq 3 \times \text{ULN}$

\*Symptoms may be subtle in young children and children with developmental delay (e.g. vomiting, feeding refusal or intolerance)

Discharge when patient is tolerating full feeds and oral pain medication

Consider GI outpatient follow up for recurrent cases, severe cases and cases with fluid collections

\*\*and \*\*\* see page 2 for additional notes

## Additional Notes

### Acute Pancreatitis Classification:

- Mild acute pancreatitis
- Moderately severe pancreatitis- presence of transient (<48 hours) organ dysfunction/failure (e.g. cardiovascular, renal, respiratory), local pancreatic complications (necrosis, hemorrhage or fluid collection), systemic complications (e.g. SIRS), or exacerbation of prior comorbid disease
- Severe acute pancreatitis- prolonged organ dysfunction/failure (>48 hours)

### Antibiotics:

- Prophylactic antibiotics are not recommended as they have been shown to predispose to fungal infections
- If required, obtain blood culture prior to initiating antibiotics

### Consults

- GI - poor progression, local complications (fluid collections, vascular complications, superimposed infection), systemic complications (end organ dysfunction), hypertriglyceridemia
- Surgery - concern for infected necrotizing pancreatitis, progressive ascites, signs of peritonitis or surgical abdomen, hemorrhagic or vascular complications, fluids collections or cysts that are increasing in size or develop infection or hemorrhage
- Nutrition – difficulty advancing diet, hypertriglyceridemia, need for initiation of tube feeds or parenteral nutrition

### Imaging\*\*:

- Ultrasound is the initial image of choice, but it may not provide adequate images for patients with large or gassy abdomens
- CT with IV contrast is the gold standard but should be reserved for specific cases including:
  - Abdominal trauma
  - Complicated cases of severe acute pancreatitis
  - Ambiguous diagnosis after ultrasound (e.g. delayed presentation and normal enzymes)
- When possible, delay CT 72-96 hours after the onset of symptoms, as early cross sectional imaging can underestimate the extent of disease and miss evolving complications

### Signs of Dehydration:

- <1 mL/kg/hour urine output
- Capillary refill >2 seconds
- Tachycardia
- Skin turgor (tenting)
- Elevated BUN/creatinine
- Elevated hematocrit

## End Organ Dysfunction\*\*\*

### Cardiovascular Dysfunction (despite administration of isotonic fluid bolus $\geq 40\text{mL/kg}$ in 1 hour):

- Blood pressure <5<sup>th</sup> percentile for age
- OR
- Need for vasoactive drug to maintain normal blood pressure
- OR
- Two of the following:
    - unexplained metabolic acidosis: base deficit >5mEq/L
    - increased arterial lactate >2 times upper limit of normal
    - urine output <0.5mL/kg/hour
    - prolonged capillary refill (>5 seconds)

### Respiratory Dysfunction:

- Proven need for >50% FiO<sub>2</sub> to maintain saturation  $\geq 92\%$
- OR
- Need for non-elective invasive or non-invasive mechanical ventilation

### Renal Dysfunction:

- Serum creatinine  $\geq 2$  times the upper limit of normal for age or 2-fold increase in baseline creatinine

## References

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