Management of Acute Pancreatitis (AP)

What You Need to Know

- Serial monitoring of amylase and lipase levels is not recommended due to lack of correlation with clinical progress or prognosis.
- Early IV fluids are key for symptom control and prevention of pancreatic necrosis.
- Obtain RUQ U/S when gallstone pancreatitis is suspected.
- CT is **NOT** required for diagnosis, and may be misleading in early stages of pancreatitis.
- Prophylactic antibiotics are **NOT** routinely recommended.

Algorithm 1. Initial Management (0-12 hours)

Patient presents with signs and symptoms consistent with acute pancreatitis

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Characteristic epigastric abdominal pain AND Amylase or lipase ≥ 3x upper limit of normal (ULN)

*Use clinical judgement to determine need for additional testing if both criteria are **not met**, but there is still concern for acute pancreatitis.*

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Acute pancreatitis confirmed

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Management

Early Moderate IV Fluids

- 10 mL/kg bolus in patients with hypovolemia (i.e., approximately 700 mL for 70 kg) or no bolus in patients with normovolemia.
- Then 1.5 mL/kg/hr (i.e. 100 mL/hr for 70 kg).
- LR preferred, but avoid in patients with hypercalcemia.
- Use with caution in those with history of heart failure or respiratory disease.

Symptom Control

- Encourage early patient-directed oral intake.
- Consider non-opioid adjunctive analgesia (i.e., scheduled acetaminophen 975 mg every 6 hours and scheduled ondansetron 4 mg every 6 hours for the initial 24 hrs.).
- Consider as-needed parenteral analgesia for mild to moderate pain (i.e., ketorolac 15-30 mg) and severe pain (i.e., morphine or hydromorphone).
- Encourage early ambulation.

Imaging

- **AVOID** using CT unless the diagnosis is uncertain as it may be misleading in the early stage of disease.
- RUQ U/S is recommended for patients with suspected gallstone pancreatitis (intact gallbladder, abnormal LFTs).
- See **page 3** for other imaging indications and guidelines.

Labs

- BUN, HCT, LFTs, triglyceride (TG), calcium, C-reactive protein

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Reassess patient and response to fluids within 4-6 hours:
Vitals, Urine output, and Fluid status (avoid fluid overload)

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Goals Met?

- Decrease in heart rate
- Urine output > 0.5 mL/kg/hr
- Decrease in BUN
- Decrease in HCT

If symptoms are controlled or nearly controlled in ED, consider transfer to CDU/observation unit for fluids, PO challenge, and early discharge.

↓ NO

- Continue 1.5 mL/kg/hr.
- Consider repeat bolus of 10 mL/kg in case of urine output < 0.5 mL/kg/hr or systemic BP < 90 mmHg.

See page 2 for appropriate level of care 12-72 hours after admission

Determine Clinical Severity to Guide Subsequent Management *Consider comorbidities and pre-existing organ failure (i.e., CHF, CKD)*			
Assessment Tool	**Criteria**	**Mild AP**	**Moderate / Severe AP**
Bedside Index for Severity in Acute Pancreatitis (BISAP)	▪ BUN > 25 mg/dL ▪ Altered mental status based on Glasgow Coma Scale (≤ 5) ▪ Systemic Inflammatory Response Syndrome Criteria (SIRS) ≥ 2 ▪ Age > 60 years ▪ Pleural effusion on CXR	**≤ 2**	**≥ 3**
12-24 Hours Post Arrival	**Mild AP**	**Moderate/Severe AP**	

Fluid Management	▪ Determine volume status following resuscitation in emergency room.
	  ○ Generally, 10-20ml/kg initial bolus is sufficient
	▪ Ensure fluid management goals are met:[+]
	  ○ Urine output > 0.5 mL/kg/hr
	  ○ Decrease in HCT and BUN from admission
	▪ 1.5 mL/kg/hr LR with PO as tolerated.
	▪ If suspicious for fluid overload, consider discontinuing or decreasing IV fluids.
	
	Note: If SIRS is persistently ≥ 2 at 24 hours manage patient as severe.
		▪ Determine volume status following resuscitation in emergency room.
		  ○ Generally, 10-20ml/kg initial bolus is sufficient
		▪ Ensure fluid management goals are met:[+]
		  ○ Urine output > 0.5 mL/kg/hr
		  ○ Decrease in HCT and BUN from admission
		▪ Consider additional bolus of 10 mL/kg LR if fluid management goals are not met by 12 hours.
		▪ 1.5 mL/kg/hr LR with PO as tolerated.
		▪ If suspicious for fluid overload, consider discontinuing or decreasing IV fluids.	

Diet/Nutrition	▪ Early patient-directed oral feeding (starting with clear liquids is not required)	▪ Early patient-directed oral feeding (starting with clear liquids is not required)	
24-72 Hours Post Arrival	**Mild AP**	**Moderate/Severe AP**	
Fluid Management	▪ Continue 1.5 mL/kg/hr until tolerating satisfactory oral intake to meet fluid requirements.	▪ Continue 1.5 mL/kg/hr until tolerating satisfactory oral intake to meet fluid requirements.	
Diet/Nutrition	▪ Early patient-directed oral feeding (starting with clear liquids is not required) ▪ Consider NG if unable to take PO 48 hours after arrival. If unable to tolerate NG feeding, consider NJ and/or consultation with Gastroenterology.	▪ Early patient-directed oral feeding (starting with clear liquids is not required) ▪ Consider NG if unable to take PO 48 hours after arrival. If unable to tolerate NG feeding, consider NJ and/or consultation with Gastroenterology. ▪ Parenteral should generally be avoided but may be recommended if unable to achieve nutritional targets with enteral nutrition.	
Antibiotics	▪ Prophylactic antibiotics are **NOT** routinely recommended.	▪ Prophylactic antibiotics are **NOT** routinely recommended.[+] ▪ Consider empiric antibiotics if suspected infection with clinical decompensation.	

24-72 Hours Post Arrival	Mild AP	Moderate/Severe AP
Consults	▪ Gastroenterology for questions regarding management. Routine consult to GI is not required. ▪ Nutrition if placing feeding tube. ▪ Outpatient GI referral (specify pancreas clinic) is recommended for patients not evaluated by GI during the hospitalization. ▪ Acute Care Surgery (ACS) if patient needs to be evaluated for surgical intervention	▪ Gastroenterology for questions regarding management. Routine consult to GI is not required. ▪ Acute Care Surgery (ACS) if patient needs to be evaluated for surgical intervention. ▪ Nutrition if placing feeding tube. ▪ Outpatient GI referral is recommended for patients not evaluated by GI during the hospitalization.
Management of Complications	▪ There is no utility in monitoring serial serum amylase or lipase after initial diagnosis. ▪ If there is no clinical improvement by 72 hours, consider CT scan of the abdomen and pelvis with IV contrast. ▪ Asymptomatic fluid collections do not require intervention regardless of size, location, or extension. ▪ If there is evidence of infected necrosis: o Start antibiotics: ▪ See OSUWMC Inpatient Infection by Site Antibiotic Grid o Defer drainage 4–6 weeks to allow minimally invasive approach.[+]	

+Recommendations based on high quality evidence

Indications for Imaging

See also: American College of Radiology ACR Appropriateness Criteria® Acute Pancreatitis

RUQ US	**CT** (IV contrast, PO unnecessary)	MRI with contrast and MRCP	EUS	ERCP
▪ Recommended as the initial imaging test to assess for gallstones in patients with intact gallbladder.	▪ On admission only if diagnosis is uncertain and no alternative diagnosis is more likely ▪ CT within 72 hours of symptom onset may underestimate severity and may not detect necrosis	▪ Not routinely indicated in mild AP ▪ MRI or EUS can be used to evaluate for retained choledocholithiasis depending on the clinical scenario	▪ Can evaluate for cholelithiasis, choledocholithiasis, or ampullary mass ▪ EUS is most helpful during the outpatient evaluation	▪ **Emergent:** for ascending cholangitis[+] ▪ **Urgent:** for treatment of choledocholithiasis

+Recommendations based on high quality evidence

Local Complications/Fluid Collections		
The management of peripancreatic fluid collections is beyond the scope of this guideline. Due to the complexity of these clinical scenarios, treatment plans should be developed by a multidisciplinary team.		
	< 4 weeks	**≥ 4 weeks**
Interstitial Acute Pancreatitis	**Acute peripancreatic fluid collection** ▪ Occur early in mild, interstitial acute pancreatitis ▪ Typically sterile ▪ Do not have a well-defined wall	**Pancreatic pseudocyst** ▪ Large peripancreatic fluid collections can develop after 4−6 weeks ▪ Typically sterile ▪ Have a well-defined wall and contain essentially pure fluid ▪ Do not require intervention unless patient is symptomatic
Necrotizing Acute Pancreatitis	**Acute necrotic collection** ▪ Occur early in severe acute pancreatitis with necrosis of the pancreatic or extrapancreatic tissue ▪ Heterogenous appearance and do not have a well−defined wall ▪ Does not require prophylactic antibiotics ▪ Early intervention can be detrimental to the patient	**Walled off pancreatic necrosis** ▪ Acute necrotic collection can progress into this after 4−6 weeks ▪ Have a well−defined wall and contains variable amounts of debris ○ Solid components are best seen on MRI ▪ Intervention is reserved for symptomatic patients

Potential Etiologies	Recommendations	Discharge Planning

Gallstones (40–70%)	▪ Strongly consider diagnosis if ALT is ≥ 3x ULN (PPV 95%)
	▪ For **mild** gallstones/pancreatitis:
	  ○ Recommend same admission cholecystectomy +
	▪ For **severe** gallstone pancreatitis including necrosis:
	  ○ Delay cholecystectomy for 4 weeks and consider sphincterotomy if patient is a poor surgical candidate
		▪ Same admission cholecystectomy is recommended for mild gallstone pancreatitis+

Alcohol (25–35%)	▪ Check PETH ▪ Follow CIWA protocol and provide supportive care ○ See OSUWMC Alcohol Withdrawal CPG	▪ Social work consult ▪ Plan for sobriety ▪ Very high recurrence of AP with continued ETOH abuse, especially when combined with smoking
Metabolic (1–4%): Hypertriglyceridemia	▪ Consider as etiology of AP if TG > > 1,000 mg/dL ▪ Goal of treatment is to reduce TG to <500 mg/dL ▪ NPO status may reduce TG by 40% within 24 hours ▪ Plasmapheresis is not routinely indicated, and has similar outcomes to NPO +/- insulin infusion ▪ Consider Endocrinology consultation	▪ Start triglyceride lowering regimen prior to discharge. See Management of Hypertriglyceridemia Clinical Practice Guideline. ▪ Endocrine or lipid clinic and PCP follow-up
Metabolic (1–4%): Hypercalcemia	▪ Avoid LR resuscitation (contains calcium) ▪ Workup underlying cause ▪ Consider Endocrinology consultation	
Idiopathic	▪ Obtain phosphatidylethanol level during pancreatitis attacks to exclude alcohol use	▪ Requires follow-up in Pancreas Clinic
Autoimmune	▪ This is a rare etiology ▪ No need to check IgG4 levels as an inpatient	▪ Requires follow-up in Pancreas Clinic
Drug Induced	▪ Stop offending medications ▪ If pharmacologic support is still required, replace old medications with those less likely to cause pancreatitis	

All Patients	▪ Adequate nutritional intake (PO or other arrangements)
	▪ Alcohol and tobacco free indefinitely
	▪ Control of GI symptoms:
	  ○ Consider exocrine insufficiency (steatorrhea)
	  ○ Consider endocrine insufficiency (diabetes)	

+ Recommendation is based on high quality evidence.

References

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Quality Measures

- Patients with an abdominal CT within 0-6 hours of arrival, 6-12 hours, and > 12 hours
- Patients with an ultrasound within 72 hours of admission
- Patients with abdominal MRI scans within 72 hours of admission
- Length of stay
- Patients readmitted within 30 days
- Mortality rate
- Number of days patient is NPO

OSUWMC Resources

- Order set GE: Acute Pancreatitis Admission (Supplemental) [2191]

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