



AGA Clinical Practice Update on the Epidemiology, Evaluation, and Management of Exocrine Pancreatic Insufficiency (EPI): Expert Review

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Conditions	Pathomechanism	Definition	Screening	Diagnosis	Management	Goal
<ul style="list-style-type: none"> Pancreatic cancer Pancreatic resection Chronic pancreatitis Cystic fibrosis 	Loss of parenchyma	<ul style="list-style-type: none"> A disorder caused by the failure of the pancreas to deliver pancreatic digestive enzymes to the intestine to digest meals and meet nutritional & metabolic needs. 	<ul style="list-style-type: none"> High risk: chronic pancreatitis, relapsing acute pancreatitis, pancreatic ductal carcinoma, cystic fibrosis, & h/o pancreatic surgery. Moderate risk: duodenal disease (celiac, Crohn's), h/o GI surgery, DM, & gastrinoma. Clinical signs: steatorrhea ± diarrhea, abdominal pain/distention, weight loss, bloating, flatulence, vitamin A, D, E, K, and B12 deficiency, & malnutrition. 	<ul style="list-style-type: none"> Fecal elastase 1 level on semi-solid/solid stool, OK to test while on PERT. < 100 µg/g = definite, 100 - 200 µg/g = indeterminate -> repeat if ↑ probability. Do not recommend fecal fat test or PERT trial. Imaging (CT, MRI, & EUS) is useful for underlying pancreatic disease diagnosis but not for EPI. 	<ul style="list-style-type: none"> Pancreatic enzyme replacement therapy (PERT): <ul style="list-style-type: none"> - Initial: lipase 500 units/kg/meal + 250 units/kg/snack. - Subsequent: titrate based on meal size and fat content. - Max: lipase 2,500 units/kg/meal or 10,000 units/kg/day. Monitor: stool frequency, steatorrhea, GI symptoms, vitamins A, D, E, K, folate, B1, B12, Mg, Se, Zn, iron studies, prealbumin, CRP, glucose, Hba1c, BMI, muscle strength, DEXA, side effects (nausea, cramping, bloating, diarrhea/constipation, fibrosing colonopathy, allergic reaction, & hyperuricosuria). Lifestyle modification: low-moderate fat diet, high protein food, avoid alcohol/tobacco, frequent smaller meals, dietary supplements, & exercise. 	<ul style="list-style-type: none"> ↓ Symptoms -> ↑ Quality of life ↓ Long-term sequela of untreated EPI
<ul style="list-style-type: none"> Duodenal resection Crohn's Celiac disease Somatostatinoma 	<ul style="list-style-type: none"> ↓ CCK-mediated secretion ↓ Enterokinase 				<ul style="list-style-type: none"> Brand <ul style="list-style-type: none"> ○ Creon® ○ Zenpep® ○ Pancreaze® ○ Perzyme® ○ Viokace® (non-enteric coated) ○ Relizorb® (for enteral feedings) 	
<ul style="list-style-type: none"> Dumping syndrome Short gut syndrome Gastric resection Surgery reconstruction Gastrinoma 	↓ Pancreatic enzyme activity in small bowel					
<ul style="list-style-type: none"> Pancreatic cancer Ductal stenosis Ampullary tumor 	<ul style="list-style-type: none"> PD obstruction ↓ Pancreatic enzyme & HCO₃⁻ delivery 					