Essential Nutrition Strategies for Pancreatic Cancer Care

Allegheny Health Network

Pancreatic Cancer Symposium

April 11, 2025

Rachel Harken, MS, RD, CSO, LDN

Objectives

Discuss	Identify	Review
Discuss the importance of early nutrition intervention in patients with pancreatic cancer	Identify nutritional needs of the pancreatic cancer patient and nutrition interventions	Review pancreatic enzyme replacement therapy (PERT)

Importance of Nutrition

As many as 40% of patients experience weight loss and anorexia prior to cancer diagnosis

50-90% of pancreatic cancer patients experience weight loss or malnutrition or both

Weight loss of as little as 6% of body weight correlates to a decreased response to treatment, decreased quality of life and decreased survival

70-80% of pancreatic cancer patients experience cachexia by the time of death

Sequelae of Malnutrition

- Weight loss
- Decreased energy
- Muscle wasting
- Increased risk of hospital admission
- Decreased effectiveness of anti-cancer therapy
- Confusion
- Infection
- Decreased mobility
- Decreased quality of life

Benefits of Weight Stabilization

- Minimize side effects of treatment
- Decrease risk of hospitalization
- Improve quality of life
- Adherence to treatment schedule
- Better surgical outcomes
- Improved survival

Nutritional Care for Pancreatic Cancer Patients

- Early and routine intervention
- Ongoing follow up to monitor weight and weight status, nutritional intake, side effects of treatment
- Individualized education and counseling to help ensure adequate nutritional intake and mitigate side effects of treatment

Nutritional Care for Pancreatic Cancer Patients

- Malnutrition risk assessment
- Comprehensive nutritional assessment
- Individualized nutrition education, counseling and recommendations

Common Nutrition Concerns in Patients with Pancreatic Cancer

- Malnutrition and weight loss
- Fatigue
- Early satiety and anorexia
- Gastrointestinal side effects
- Diabetes mellitus
- Food safety
- Food insecurity and cost of products
- Psychosocial issues

Nutrition Intervention

Food and/or nutrient delivery

Nutrition education and counseling

- Management of nutrition impact symptoms from cancer or cancer directed therapy
- Diet modifications
- Lifestyle changes or recommendations

Coordination of nutrition care

Nutrition Therapy for Poor Appetite and Early Satiety

- Eat most when feeling best
- Small frequent meals and snacks
- Increase protein and calories
- Drink beverages between meals
- Oral nutritional supplements, shakes, smoothies
- Increase physical activity

Common Symptoms at Diagnosis

Symptom	Prevalence	Possible etiology
Jaundice/clay colored stool	51% - 72%	Blocked bile duct
Weight loss	70%-80%	Malabsorption Cancer cachexia
Decreased appetite	28%-48%	Jaundice Cancer cachexia
Malabsorption/exo-crine pancreatic insufficiency	50%-94%	Blocked pancreatic duct Block bile duct Decreased enzyme production
Gastric outlet obstruction	2%-38%	Duodenal block or stricture
Diabetes mellitus	50%-80%	Decreased insulin production
Ascites	22%	Portal vein hypertension Peritoneal involvement Hepatic insufficiency

Nutrition Impact Symptoms from Pancreatic Cancer and/or Treatment

Anorexia	Mucositis	Cold sensitivity	Nausea and vomiting
Early satiety	Gastric outlet obstruction	Delayed gastric emptying	Exocrine pancreatic insufficiency
Gas, bloating and abdominal pain or cramping	Diarrhea	Steatorrhea	Constipation

Exocrine Pancreatic Insufficiency (EPI) and Pancreatic Enzyme Replacement Therapy (PERT)

Causes of EPI

Loss of pancreatic parenchyma

Obstructed pancreatic duct or common bile duct

Decreased pancreatic enzyme production, activity or delivery

EPI in Pancreatic Cancer

- Resectable pancreatic cancer: 55-89% of patients
- Unresectable pancreatic cancer: 50-100% of patients
- 38%-45% of patients prior to Whipple
- 56%-98% of patient post-Whipple
- Up to 80% after distal pancreatectomy

Phillips, *Pancreatology*, 2015

Importance of Identifying EPI

- Lack of awareness of EPI in patients and the signs and symptoms of EPI
- Steatorrhea is a late symptom
- Morbidity and mortality
- Requires a multidisciplinary approach

Morbidity of EPI

Malabsorption and maldigestion	
Gas, bloating, cramping, flatulence	Loose stool, increased frequency and/or urgency, steatorrhea

Fat soluble vitamin deficiency and chronic malnutrition		
Decreased bone density	Increased risk of cardiovascular events	Malnutrition, increased mortality

Indication for Initiating PERT after Resection

- Pancreatic function test
  - Fecal elastase
- Clinical symptoms/assessment
  - Postprandial abdominal discomfort, bloating, flatulence
  - Steatorrhea
- Nutritional assessment
  - Weight loss despite adequate nutritional intake
  - Micronutrient deficiencies

Meeting one or more of the criteria indicates the need for PERT

Phillips, *Pancreatology*, 2015

EPI Checklist

Do your stools look oily, smell foul, and float?

Do you have frequent gas?

Do you have unexplained stomach pains, especially when you eat?

Do you feel bloated frequently?

Have you experienced unexplained weight loss?

Have you been unable to hold bowel movements or had to rush to the bathroom, especially in the middle of the night?

Are you currently taking any medication(s) or supplement(s)?

When did your symptoms start?

On a scale of 1-10, how severe do you consider your symptoms?

ANTHROPOMETRIC DATA

BIOCHEMICAL DATA

CLINICAL SYMPTOMS

NUTRITIONAL INTAKE

MEDICAL AND SURGICAL HISTORY

MEDICATIONS

Nutritional Assessment

Nutrition therapy for malabsorption and EPI

- Nutrition education and counseling
- Avoid foods that are difficult to digest
- Do not restrict fat intake
- Fat-soluble vitamin supplementation as needed
- Pancreatic enzyme replacement therapy (PERT) as prescribed

Pancreatic enzyme replacement therapy

- Help to maintain or increase body weight
- Decrease stool frequency
- Increase total caloric and protein intake
- May help to prevent micronutrient deficiencies
- Increased quality of life

PERT formulations approved by the FDA

Brand/manufacturer	Available lipase units	Dosage form
Creon/AbbVie	3,000, 6,000, 12,000, 24,000, ***36,000***	Delayed-release capsule, enteric-coated spheres or beads
Pertzye/Digestive Care	4,000, 8,000, 16,000, ***24,000***	Delayed-release capsule, bicarbonate buffer, enteric-coated spheres or beads
Zenpep/Allergan	3,000, 5,000, 10,000, 20,000, ***25,000***, ***40,000***	Delayed-release capsule, enteric-coated spheres or beads
Viokace/Allergan	10,400, ***20,880***	Tablet (no enteric coating)
Pancreaze/Vivus	2,600, 4,200, 10,500, 16,800, ***21,000***	Delayed-release capsule, enteric-coated spheres or beads

PERT dosing and administration

Meal-based dosing

Total dose divided throughout the meal

20,00-75,000 lipase units per meal and 5,000-50,000 lipase units per snack

Max dose 2,500 units per kg body weight per meal

Max dose 10,000 units per kg body weight per day

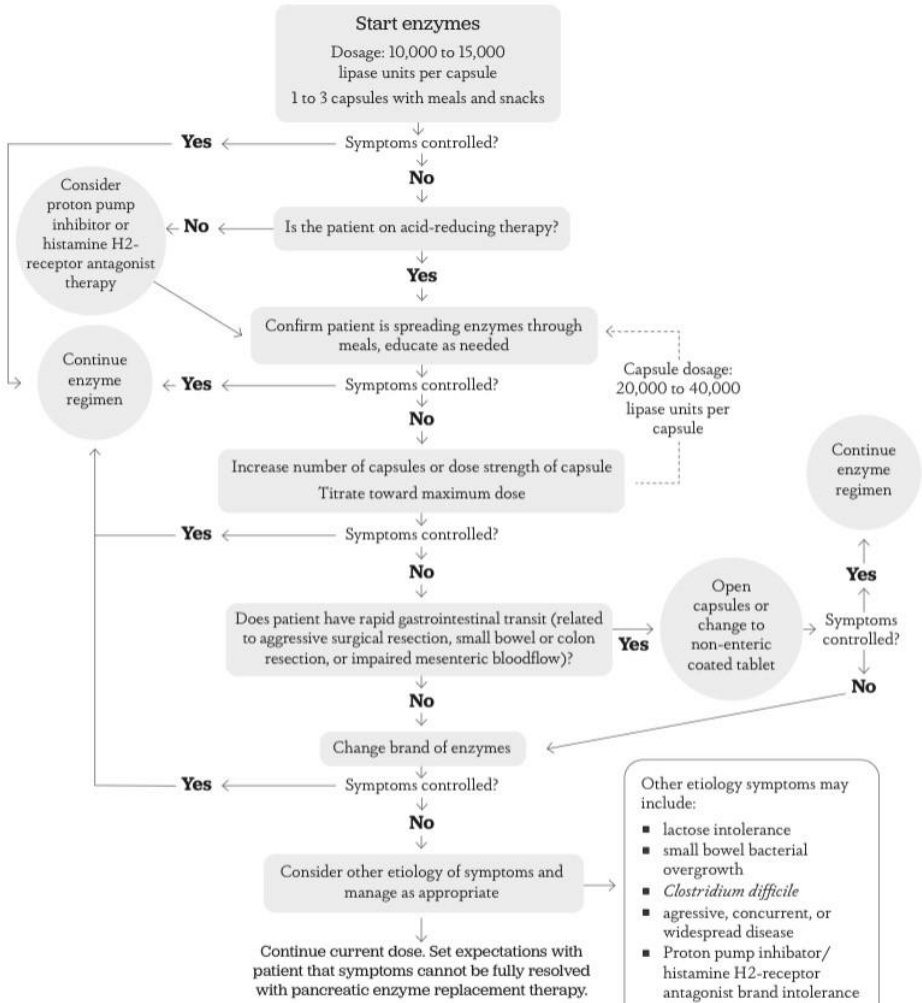

Figure 20.8
Pancreatic enzyme replacement optimization

Adapted with permission from EDP Consulting, LLC, Houston, Texas.

Voss, Ann Coble and Williams, Valaree. *Oncology Nutrition for Clinical Practice, Second Edition*. Oncology Nutrition Dietetic Practice Group, 2021

PERT administration

- Take during each meal or snack with enough fluid
- Capsules should be swallowed intact
- Missed dose
  - Take next dose as usual with next meal; do not double the dose
- Difficulty swallowing
  - Capsule may be opened
  - Add contents to small amounts of acidic soft food (pH < 5.5) that do not require chewing (e.g., apple sauce)

PERT Considerations

- Additional use of H2-receptor antagonist or proton pump inhibitor
- Some brands have a bicarbonate buffer
- Some symptoms of EPI are characteristic of other disease-related issues so PERT may not resolve all symptoms
- May not eliminate steatorrhea completely, but PERT can reduce symptoms by 60% - 70%
- Cost

Case Study

- 66 y/o female with resectable pancreatic cancer. Received 8 cycles of neoadjuvant FOLFIRINOX. Maintained weight during neoadjuvant treatment. Good appetite and intake. Participated in exercise oncology program. Minimal nutrition impact symptoms from treatment.
- Post-Whipple severe 9% weight loss (5.3 kg) in 2 months. Felt she had dumping syndrome. Normally 1 bowel movement per day now 4-6. Postprandial discomfort and gas. Stool not oily but foul-smelling. Was prescribed PERT (2 months after surgery) but not taking it consistently as prescribed.
- Very good appetite. Distressed about weight loss and fatigue despite good nutritional intake.
- Nutrition education and counseling for PERT.

Improving Nutrition Care for Pancreatic Cancer Patients

Focus on research and development to create more effective and targeted nutrition services

Collaboration between dietitians, providers, and industry to increase awareness and improve access to oncology nutrition services

Technology to enhance delivery of individualized nutrition care to oncology patients

Questions

References

American Institute for Cancer Research. *10 recommendations for cancer prevention*. Retrieved July 18, 2024, from https://www.aicr.org/learn-more-about-cancer/infographics/10-recommendations-for-cancer-prevention.html

Brennan, G., & Saif, M. W. (2019). Pancreatic enzyme replacement therapy: A concise review. *Journal of Oncology Practice*, *20*(5), 121–125.

Dominguez-Munoz, J. E. (2019). Management of exocrine pancreatic insufficiency. *Current Opinion in Gastroenterology*, *35*(5).

Dominguez-Munoz, J. E., Nieto-Garcia, L., Lopez-Diaz, J., Larino-Noia, J., Adulkader, I., & Iglesias-Garcia, J. (2018). Impact of the treatment of exocrine pancreatic insufficiency on survival of patients with unresectable pancreatic cancer: A retrospective analysis. *BMC Cancer*, *18*(1), 534. https://doi.org/10.1186/s12885-018-4439-x.

Elliot, L., Levin, R., & McIver, J. (2021). *The complete resource kit for oncology nutrition*. Oncology Nutrition Dietetic Practice Group.

Essentials of EPI. Retrieved March 26, 2025. https://www.essentialsofepi.com.

Hébuterne, X., & Lemarié, E. (2014). Prevalence of malnutrition and current use of nutrition support in patients with cancer. *Journal of Enteral and Parenteral Nutrition*, *38*(2), 196–204.

La Torre, M., Ziparo, V., Nigri, G., Cavallini, M., Balducci, G., & Ramacciato, G. (2013). Malnutrition and pancreatic surgery: Prevalence and outcomes. *Journal of Surgical Oncology*, *107*, 702–708. https://doi.org/10.1002/jso.23304.

Layer, P., Kashirskaya, N., & Gubergrits, N. (2019). Contribution of pancreatic enzyme replacement therapy to survival and quality of life in patients with exocrine pancreatic insufficiency. *World Journal of Gastroenterology*, *25*(20), 2430–2441. https://doi.org/[Insert DOI if available]

Phillips, M. E. (2015). Pancreatic exocrine insufficiency following pancreatic resection. *Pancreatology*, *15*, 449–455. https://doi.org/10.1016/j-pan.2015.06.003.

Sabater, L., et al. (2016). Evidence-based guidelines for the management of exocrine pancreatic insufficiency after pancreatic surgery. *Annals of Surgery*, *20*(10), 1–10. https://doi.org/10.1097/SLA.0000000000001732.

Sikkens, E. C. M., Cahen, D. L., de Wit, J., Looman, C. W. N., van Eijck, C., & Bruno, M. J. (2014). Prospective assessment of the influence of pancreatic cancer resection on exocrine pancreatic function. *British Journal of Surgery*, *101*, 109–113. https://doi.org/10.1002/bjs.9342.

Voss, A. C., & Williams, V. (2021). *Oncology nutrition for clinical practice* (2nd ed.). Oncology Nutrition Dietetic Practice Group.