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Pancreatic Cancer

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Disclosures

Megan Morsi, MS, PA-C

No financial relationships to disclose

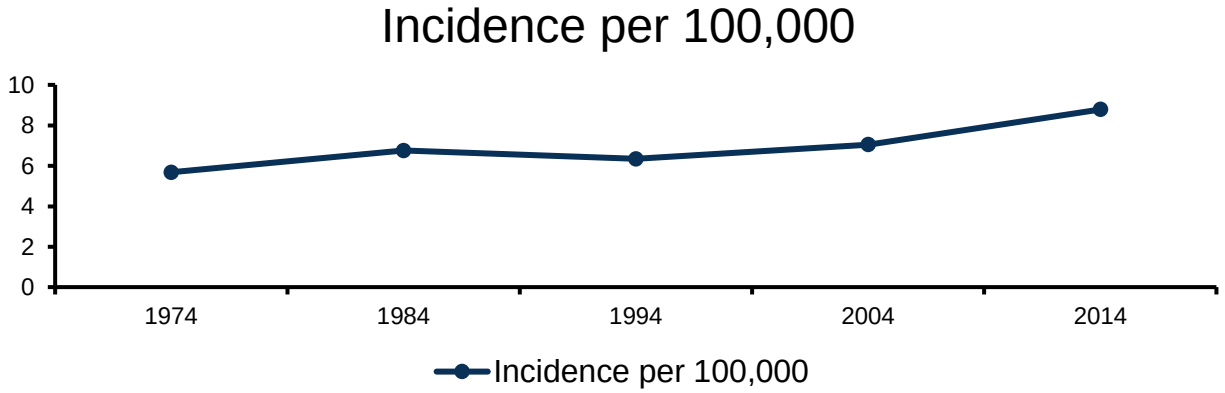
Objectives

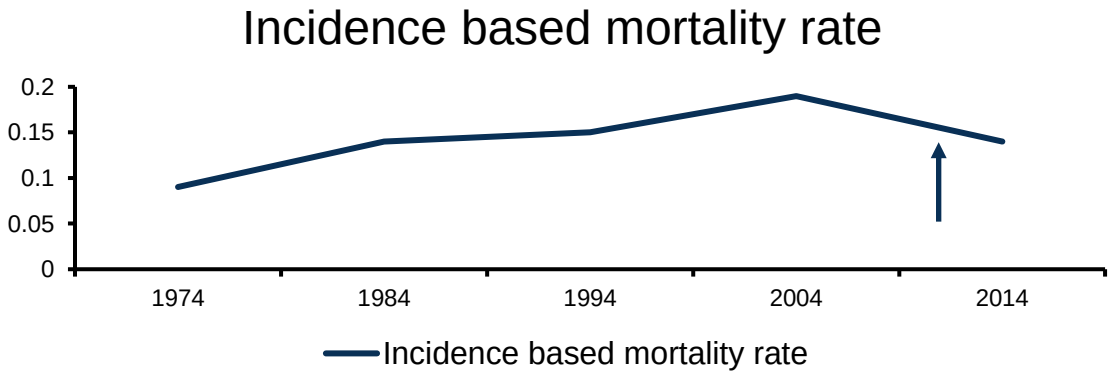
- Identify trends and understand epidemiology of pancreatic adenocarcinoma (PDAC)
- Learn risk factors for PDAC
  - Which patients require surveillance and what does surveillance for PDAC entail
- Be able to diagnose and stage PDAC

Epidemiology

- Pancreatic cancer (PC) is the fourth leading cause of cancer death in the US
- Pancreatic cancer accounts for 3% of all cancers
  - 7% of all cancer related deaths
- About 57,600 patients diagnosed in the US per year
- Lifetime risk of developing pancreatic cancer for an average risk individual is 1/64 (1.56%)

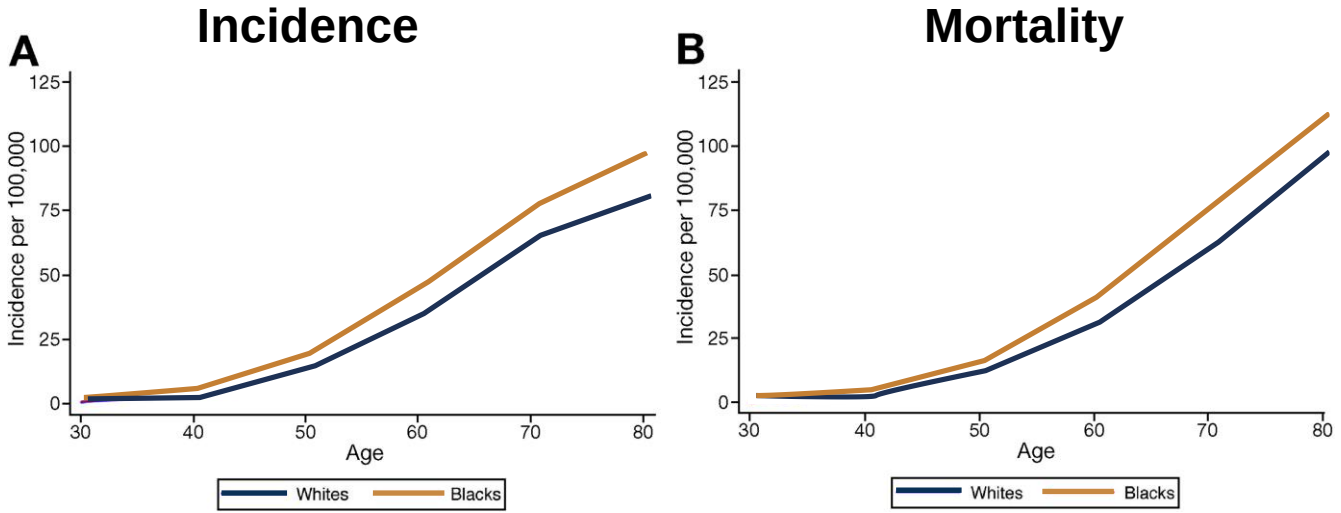
Epidemiology





Epidemiology

- Racial disparities in Black and White patients exist in the US and vary based on age, geography and stage



Age-specific incidence (*A*) and mortality (*B*) rates of pancreatic cancer by 10-year age group and race, National Program of Cancer Registries. (*A*) Incidence and (*B*) mortality by race from 2001 to 2015.

Who Is at Risk

- Modifiable
  - Smoking
  - Obesity
  - Chronic pancreatitis*
  - Workplace exposures such as dry cleaning chemicals and metal working
- Non-modifiable
  - Age
  - Gender (M>F)
  - Race
  - Family History
  - Genetic syndromes

Who Is at Risk

- **Peutz-Jeghers syndrome**, caused by defects in the *STK11* gene. This syndrome is also linked with polyps in the digestive tract and several other cancers.
- **Hereditary breast and ovarian cancer syndrome**, caused by mutations in the *BRCA1* or *BRCA2* genes
- **Hereditary breast cancer**, caused by mutations in the *PALB2* gene
- **Familial atypical multiple mole melanoma (FAMMM) syndrome**, caused by mutations in the *p16/CDKN2A* gene and associated with skin and eye melanomas
- **Familial pancreatitis**, usually caused by mutations in the *PRSS1* gene
- **Lynch syndrome**, also known as hereditary non-polyposis colorectal cancer (HNPCC), most often caused by a defect in the *MLH1* or *MSH2* genes

International Cancer of Pancreas Surveillance Consortium (CAPS) Guidelines

Who?

- All patients with Peutz-Jeghers syndrome (carriers of a germline *LKB1/STK11* gene mutation)
- All carriers of a germline *CDKN2A* mutation
- Carriers of a germline *BRCA2, BRCA1, PALB2, ATM, MLH1, MSH2,* or MSH6 gene mutation with **at least one affected first-degree blood relative**
- Individuals who have at least one first-degree relative with pancreatic cancer who in turn also has a first-degree relative with pancreatic cancer (familial pancreatic cancer kindred)

International Cancer of Pancreas Surveillance Consortium (CAPS) Guidelines

When?

Mutation carriers: For CDKN2A, Peutz-Jegher syndrome	Start at age 40
BRCA2,ATM, PALB2 BRCA1, MLH1/MSH2	Start at age 45 or 50 or 10 years younger than youngest affected blood relative
Familial pancreatic cancer kindred (without a known germline mutation)	Start at age 50 or 55 or 10 years younger than the youngest affected blood relative

There is no consensus on the age to end surveillance

International Cancer of Pancreas Surveillance Consortium (CAPS) Guidelines

How?

At Baseline	MRCP/MRI OR EUS* Fasting glucose or HbA1C
During Follow-up	Alternate MRI/MRCP and EUS (no consensus if and how to alternate) Fasting glucose or HbA1C
On indication	Serum CA 19-9 → concerning features by imaging EUS with FNA → cystic lesions with worrisome features, solid lesions >5 mm, and asymptomatic MPD stricture CT → asymptomatic PD stricture of unknown etiology

International Cancer of Pancreas Surveillance Consortium (CAPS) Guidelines

Interval?

12 months	If imaging is normal
3 or 6 months	If concerning abnormalities for which surgery is not immediately indicated
Surgery	If imaging is highly suspicious for malignancy or (+) FNA on EUS

Clinical Presentation

- Painless jaundice
- Weight loss
- Anorexia
- Epigastric pain with or without radiation to the back

Physical Exam

- Palpable abdominal mass
- Supraclavicular nodes
- Peritoneal nodules (Sister Mary Joseph node)

ERCP with double duct sign

Work-Up

- EUS/FNA
  - +/- ERCP for biliary decompression
- CA 19-9, hepatic function panel
- CT chest/abdomen/pelvis
  - +/- MR
  - +/- PET

Differential Diagnoses

- Benign
  - Chronic pancreatitis
  - Autoimmune pancreatitis
  - Choledocholithiasis
- Malignant
  - Cholangiocarcinoma
  - Duodenal adenocarcinoma
  - Metastatic from breast, melanoma or renal cell
  - Pancreatic neuroendocrine tumors

Staging

Table 2. American Joint Committee on Cancer (AJCC) eighth edition staging system for pancreatic cancer			
Primary tumor (T)	**Regional lymph nodes (N)**		**Distant metastases (M)**
T1 Maximum tumor diameter ≤2 cm	N0 No regional lymph node metastasis		M0 No distant metastasis
T1 Maximum tumor diameter >2 cm but ≤4 cm	N1 Metastasis to 1-3 regional lymph nodes		M1 Distant metastasis
T3 Maximum tumor diameter >4 cm	N2 Metastasis to ≥4 regional lymph nodes		
T4 Tumor involves the celiac axis or the superior mesenteric artery (unresectable primary tumor)			
Stage			
Stage IA **Resectable**	T1	N0	M0
Stage IB **Borderline Resectable**	T2	N0	M0
Stage IIA	T3	N0	M0
Stage IIB **Locally Advanced**	T1-T3	N1	M0
Stage III	Any T T4	N2 Any N	M0 M0
Stage IV **Metastatic**	Any T	Any N	M1

Staging

Resectable

- No arterial involvement
- <180 degrees contact with SMV and portal vein

Borderline Resectable

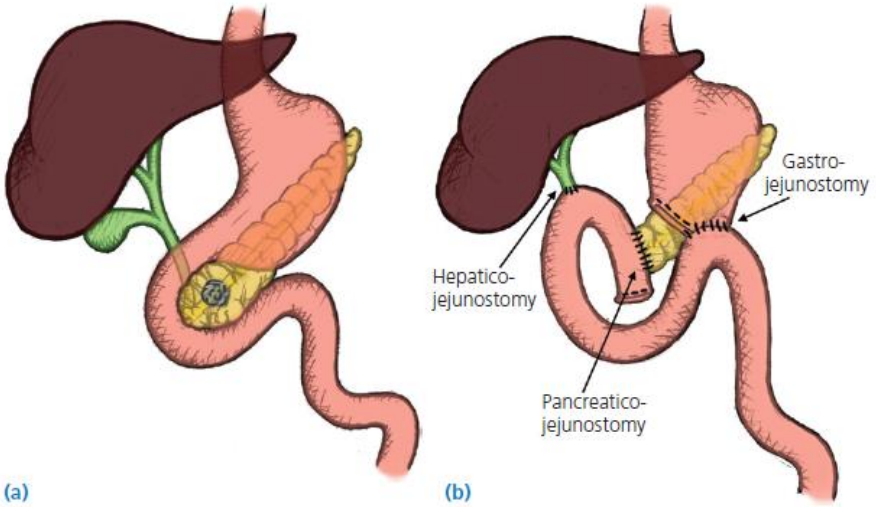
- <180 degree abutment of the superior mesenteric artery (SMA)
- Abutment to encasement of the hepatic artery
- Severe superior mesenteric vein (SMV) or portal vein infringement
- Short segment SMV occlusion

Locally Advanced

- >180 degree abutment of the SMA
- SMV or portal vein obliteration
- Involvement of the celiac axis
- Long segment SMV occlusion

Prognosis

- Resectable
  - Median survival 20 – 24 months
  - 5 year survival 15 – 20%
- Locally Advanced
  - Medial survival 8 – 14 months



Complications

- Pain
- Biliary Obstruction: 65-75% of patients
- Duodenal obstruction (Gastric outlet obstruction) 10-25% of patients
- Anxiety/Depression
- Cachexia
- Exocrine pancreatic insufficiency
- Thromboembolic disease
- GI bleeding: rare

Citations

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