

Case Study: Acute Pancreatitis

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Agenda

- Background
- Pathophysiology
- Nutritional Implications
- Assessment
- Diagnosis
- Intervention
- Summary

Background

DK camps over the weekend and drinks a moderate amount of alcohol. The following Monday, DK starts to experience abdominal discomfort, nausea, vomiting, fever, and chills. The abdominal pain progresses to the point that DK is admitted into the emergency department. He is diagnosed with acute pancreatitis.

Background

Patho-
physiology

Nutritional
Implications

Assessment

Diagnosis

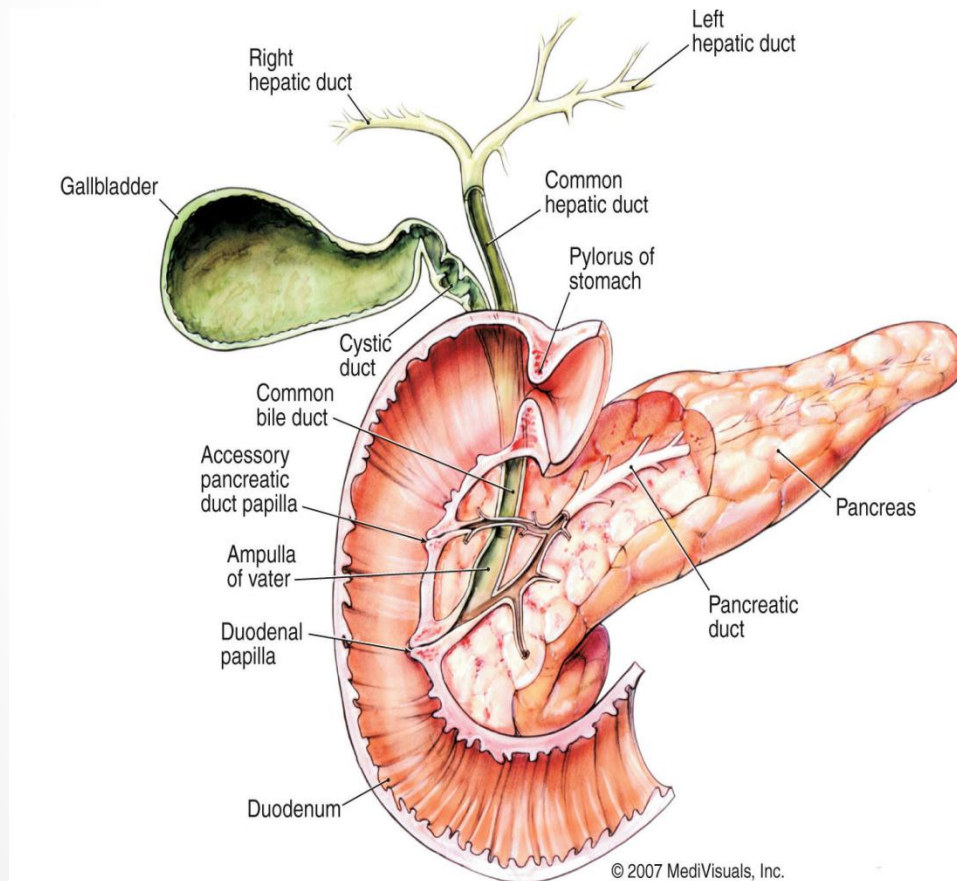
Intervention

Monitoring/
Evaluation

Summary

The Pancreas

- Functions
 - *Endocrine* and *exocrine* production and secretions



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Functions

- **Endocrine Pancreas**
 - **Islet hormones release ...**
 - A=glucagon
 - B=insulin
 - D=somatostatin
- **Exocrine Pancreas**
 - **Acinar cells release ...**
 - Digestive enzymes: lipase, amylase, and protease
 - Zymogens
 - Bicarbonate

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physiology

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Assessment

Diagnosis

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Acute Pancreatitis

- Reversible inflammation of the pancreas
- Ranges between mild, moderate, and severe
- Attacks can be once or recurring
- Prognosis
 - Differs depending on severity
 - Organ failure within 24 hours of admit significantly increases risk of death (1)
- Morbidity
 - 210, 000 hospitalized/year for acute pancreatitis (1)
- Mortality
 - <1% for mild (1)
 - 10-30% for severe (1)

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physiology

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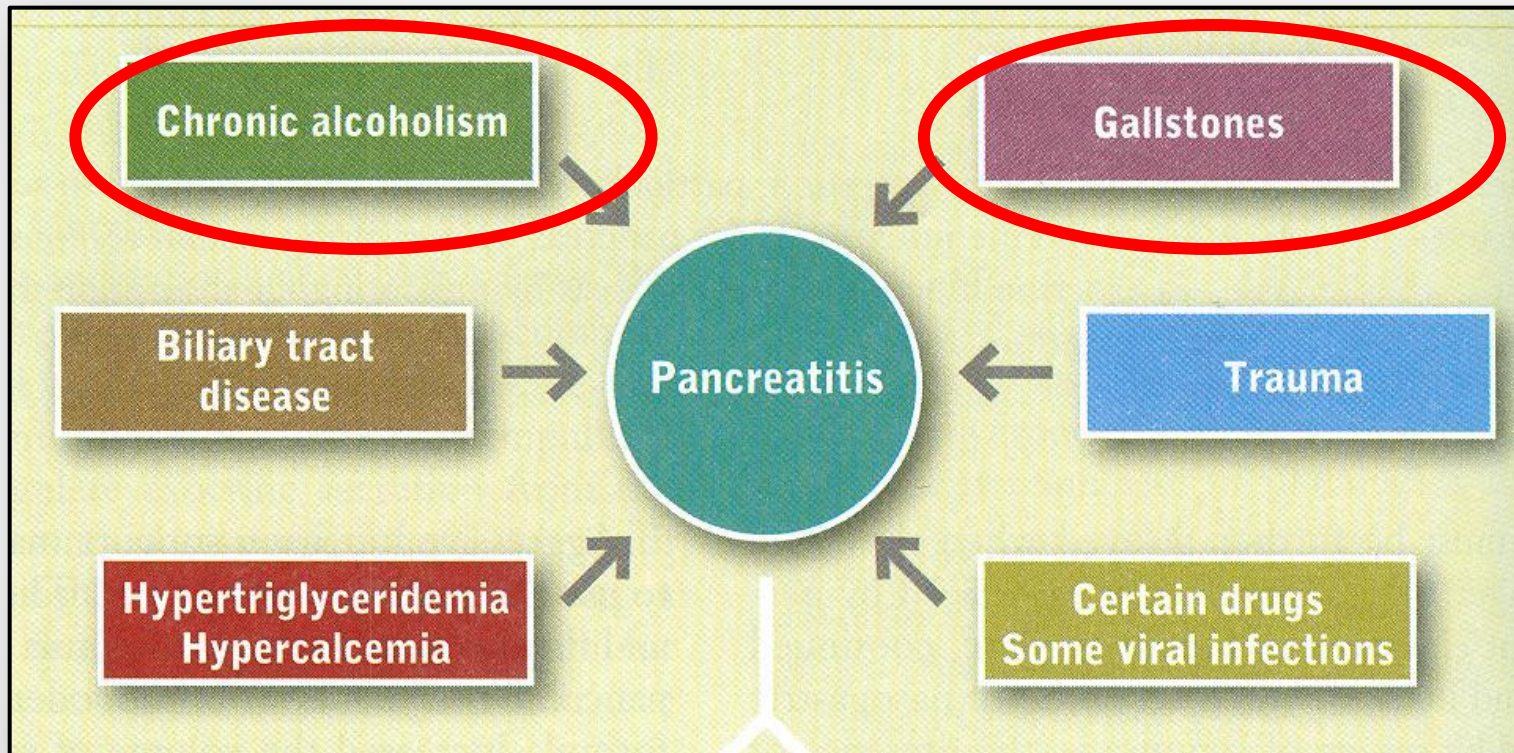
Diagnosis

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Evaluation

Summary

Etiology



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Patho-
physiology

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Assessment

Diagnosis

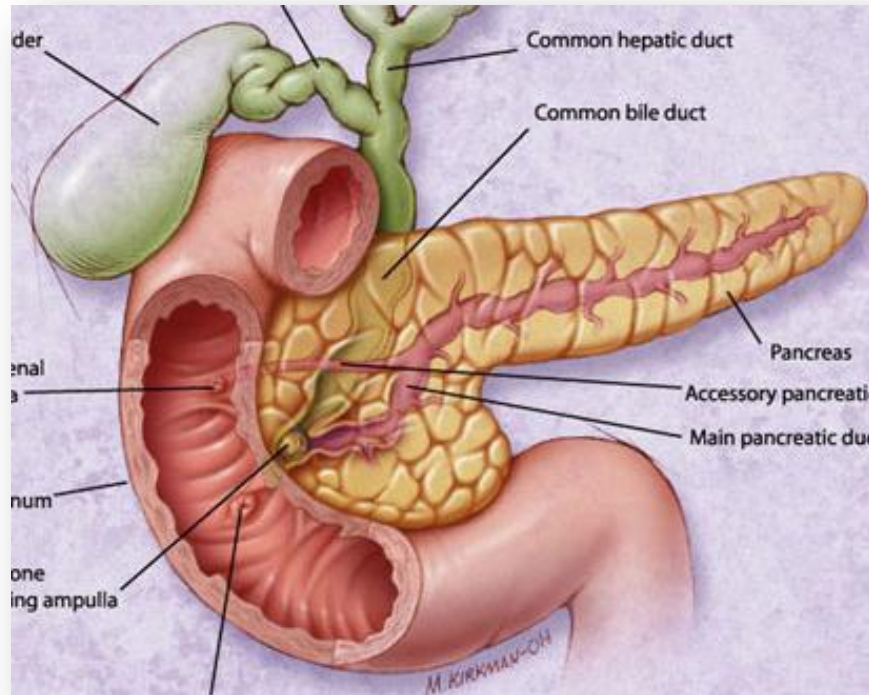
Intervention

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Summary

Alcohol and Gallstones

- Alcohol theories
 - Sphincter of Oddi (2)
 - Trypsinogen (3)
- Gallstone theory
 - Ampulla of Vater (2)



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Diagnosis

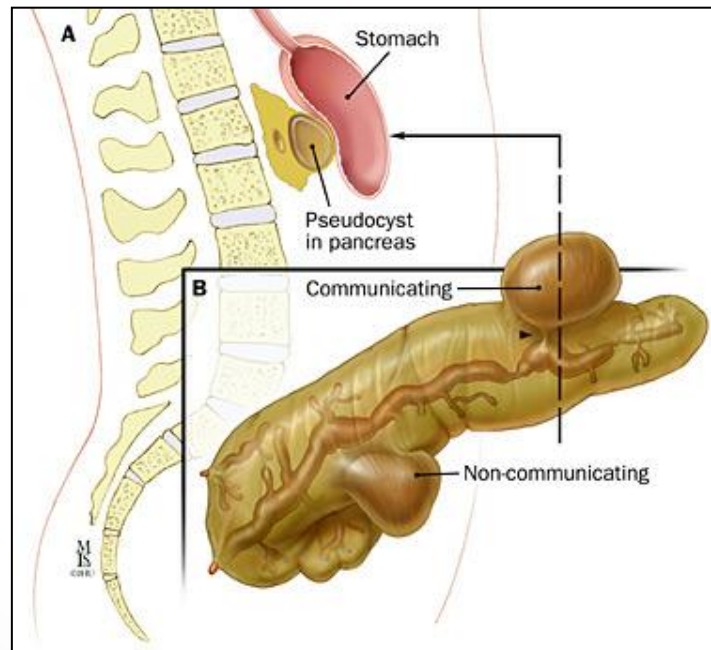
Intervention

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Summary

Physiological Consequences

- SIRS
- Pseudocysts
- Pancreatic Cancer



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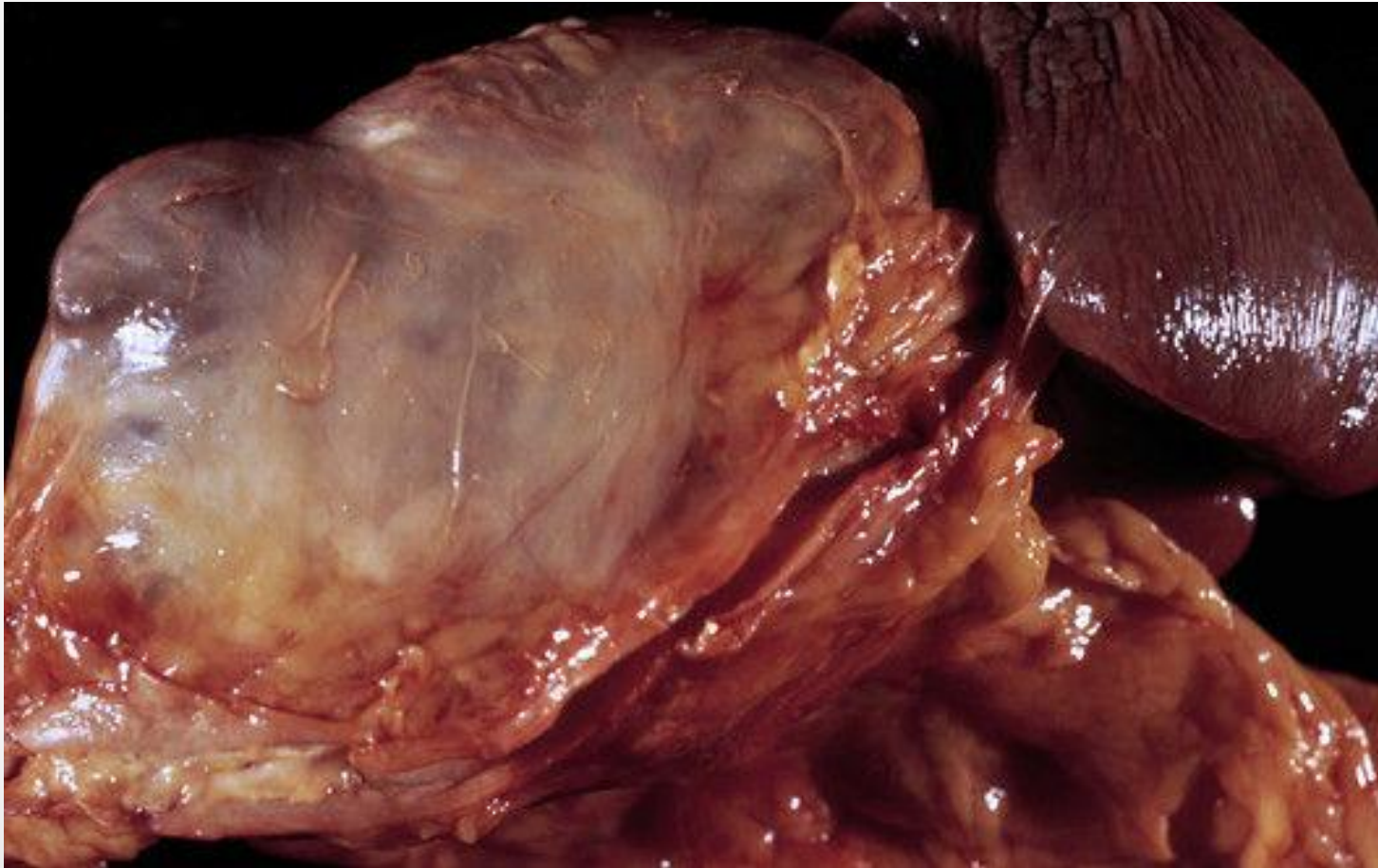
Diagnosis

Intervention

Monitoring/
Evaluation

Summary

Acute Pancreatitis w/Pseudocysts



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Patho-
physiology

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Assessment

Diagnosis

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Summary

Symptoms

- Abdominal pain
 - Most common
 - Rapid onset of maximum pain (10-20 min.)
 - Lasts several hours
- Nausea and vomiting
 - Lasts several hours
- Steatorrhea

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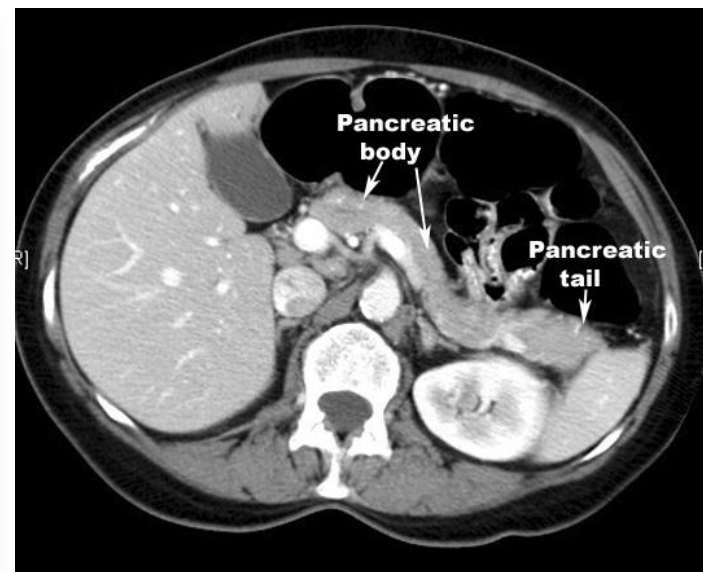
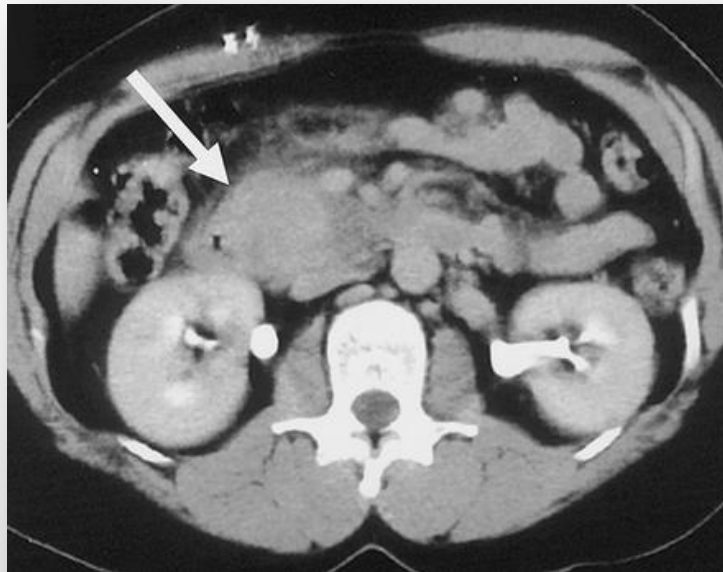
Intervention

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Summary

Diagnosis

- Ranson's Criteria or APACHE
- Lab
- Radiologic Features
 - Abdominal ultrasonography
 - Computed tomography



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Diagnosis

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Ranson's Criteria

Ranson's Criteria on Admission :

- age greater than 55 years
- a white blood cell count of $> 16,000/\mu\text{L}$
- blood glucose $> 11 \text{ mmol/L}$ ($>200 \text{ mg/dL}$)
- serum LDH $> 350 \text{ IU/L}$
- serum AST $>250 \text{ IU/L}$

Ranson's Criteria after 48 hours of admission :

- fall in hematocrit by more than 10 percent
- fluid sequestration of $> 6 \text{ L}$
- hypocalcemia (serum calcium $< 2.0 \text{ mmol/L}$ ($<8.0 \text{ mg/dL}$))
- hypoxemia ($\text{P}_{\text{O}_2} < 60 \text{ mmHg}$)
- increase in BUN to $>1.98 \text{ mmol/L}$ ($>5 \text{ mg/dL}$) after IV fluid hydration
- base deficit of $>4 \text{ mmol/L}$

The prognostic implications of Ranson's criteria are as follows :

- Score 0 to 2 : 2% mortality
- Score 3 to 4 : 15% mortality
- Score 5 to 6 : 40% mortality
- Score 7 to 8 : 100% mortality

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Assessment

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Summary

Labs

- Amylase
- Lipase
- Glucose

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physiology

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Assessment

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Summary

Treatment

- Mild or Moderate Pancreatitis
 - Fasting
 - Fluid infusion
 - Medication to reduce pain
- Severe Pancreatitis
 - Fasting
 - Fluid/electrolyte support
 - Antibiotic treatment
 - Pain meds

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Patho-
physiology

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Assessment

Diagnosis

Intervention

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Summary

Medications

- Pain meds
 - Demerol
- Pancreatic secretions
 - H2 receptor antagonists
 - Proton pump inhibitors
 - Antacids
 - Anticholinergic drugs
 - Gabexate Mesilate: protease inhibitor
- Antibiotics given for fever, leukocytosis, and sepsis

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Patho-
physiology

Nutritional
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Assessment

Diagnosis

Intervention

Monitoring/
Evaluation

Summary

Nutritional Implications

- Acute pancreatitis (4)
 - Mild to moderate
 - NPO and progress to CL or low-fat diet (NCM)
 - High-protein, low-fat, and MIV
 - Fat-soluble vitamin replacement
 - Modifications for diabetes, obesity, and alcoholism
 - Severe
 - Enteral nutrition within 24-38 hours (NCM)
 - Parental nutrition **if** enteral has failed and no nutrition support for >5 days.
 - Complications of nutrition support
- Chronic pancreatitis (4)
 - High risk for malnutrition
 - Pancreatic enzymes

Background

Patho-physiology

Nutritional Implications

Assessment

Diagnosis

Intervention

Monitoring/Evaluation

Summary

Client History

- Personal
 - 36-year old, caucasian male was admitted into the hospital on 06/15/2012
- Health history
 - hyperlipdemia, and reflux symptoms
 - Family history: diabetes and coronary disease
 - Surgery history: N/A
- Social history
 - **Significant drinking problems**
 - Anxiety and depression
 - Divorced

Background

Patho-physiology

Nutritional Implications

Assessment

Diagnosis

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Summary

Anthropometric

- Height
 - 5ft 9in.
- Weight
 - Admit weight, 202#
 - Current weight, 216#
 - UBW, 190#
- BMI/IBW%
 - 31.4 (obese stage 1), 133%

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Patho-
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Assessment

Diagnosis

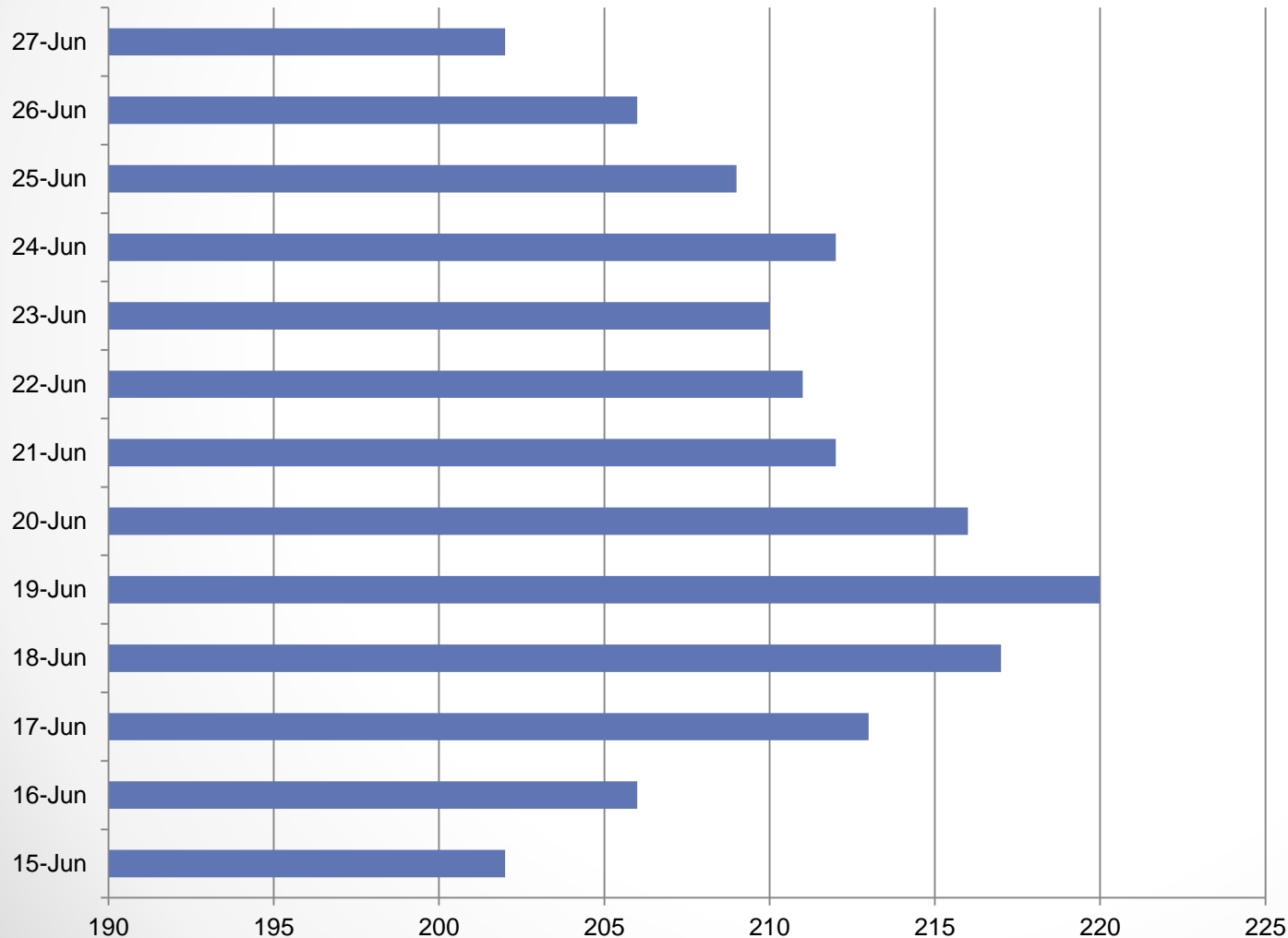
Intervention

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Weight Changes

Weight



Background

Patho-
physiology

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Summary

Biochemical

- Pancreatitis
 - AST, 70
 - Amylase 275 (H)
 - Glucose, 101 (H)
 - Cholesterol/triglycerides: 361, 891 (H)
- Malnutrition
 - AB level at admit normal (3.8)
 - AB level decreases (2.7)
- Refeeding Syndrome
 - Mg normal (2.1)
 - P low (2.3)
 - K normal (4.0)
- Renal
 - Creatine low (0.60)
 - BUN normal (10)
 - GRF normal (>60)

Background

Patho-
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Summary

Food/Nutrition Related History

- **Malnutrition**

- Diet history: N/A
- Medications & herbal supplements: N/A
- Access to food & related supplies: N/A
- Physical activity: N/A
- Knowledge/beliefs/attitudes: significant alcohol problems; unwilling to change

- **Vitamin/mineral intake**

- Hospital is giving Banana bag

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Patho-
physiology

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Assessment

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Summary

Hospital Course

- Oral intake
 - **15th:** Clear liquids, thiamine, and uncontrolled lab values
 - **16th:** Clear liquids, thiamine, and pain uncontrolled
 - **17th:** Low-fat, bland diet, thiamine, adequate oral intake, and abdominal pain continues
 - **18:** NPO, labs improve, symptoms are worse, but adequate oral intake
 - **19th:** NPO, pt gets worse, worried about volume overload, not malnourished, keep him on liquid diet and p.o. intake if possible.
 - **20th:** NPO, thiamine, and request to place jejunum Keofeed tub, feels hunger; pancreatitis is improving but still severe, and request to place jejunum Keofeed tube

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Patho-
physiology

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Intervention

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Summary

Nutrition-Focused Physical Findings

- Overall appearance
 - Awake, alert, mildly confused and agitated, and more comfortable
- Digestive system
 - Abdominal pain decreased, more controlled
 - Abdomen distended
 - Feels hungry
 - Unclear bowel movements
 - Constipation
 - Positive bowel sounds

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Patho-
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Summary

Comparative Standards

- Energy: 2200-2500
- Protein: 110 (1.5 g/kg/day, IBW)
- Fluid: 2200-2500 (1 ml/kcal)

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Patho-
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Nutritional
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Summary

Other Medical Problems

- Anemia, community-acquired pneumonia, and acute renal failure (resolved)

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Patho-
physiology

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Implications

Assessment

Diagnosis

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Summary

Diagnosis

- PES: Inadequate oral intake related to acute pancreatitis AEB severe abdominal pain and NPO.

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Patho-
physiology

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Intervention

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Summary

Intervention

- Food and/or Nutrient Delivery
 - Insert enteral feeding tube (4)
 - Goal: Pt will consume 50-70% of kcal and pro needs x 2 days
 - Specific interventions:
 1. Give 60 ml/h of Vital 1.5 providing ~2250 kcals, 101 g pro, and 1146 ml fluid x 1 day.
 2. Have PEN team closely follow pt.
 3. Monitor labs, weight, I&O's, intake, and health status x 2 days
- Nutrition Prescription:
 - Recommend pt receive 15 ml/hr of Vital 1.5. Advance feedings to 15 ml every 6 hours until 60 ml/hr is reached.
- Interfering factors
 - Risk for refeeding syndrome (3)
 - Uncontrolled symptoms and labs
 - Precontemplation stage of change

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Summary

Comparing

- Food and/or Nutrient Delivery
 - Recommendations:
 - Enteral nutrition within 24-48 hours if on NPO (4)
 - Actually done:
 - Vital 1.5 at 10 ml/h giving 2160 kcal/d, 97 g protein/d, and 1100 ml fluid/d
 - Taper IV as feeding rate advances
- Nutrition education or counseling
 - Recommendations:
 - Alcoholism associated micronutrient deficiencies and pancreatitis (4)
 - Actually done:
 - Educated about alcohol and pancreatitis
- Coordination of Care
 - Recommendations:
 - MD, RD, and nurses
 - Actually done:
 - RD followed up on 20th, possible the 19th but no record.

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Assessment

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Summary

Monitoring and Evaluations

- Adequate intake
 - Amount of food
 - Appetite
 - N/V
 - Weight
 - I&O's
- Tolerance to tube feed
 - Gastric residuals
 - N/V
- Pancreatitis labs
 - Amylase, lipase, glucose
- Refeeding labs
 - Mg, P, and Ca

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Summary

Summary

- DK's prognosis
- Effectiveness of NCP
 - Follow-up sooner

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References

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