

# Case study

Irritable Bowel Disease

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- **Clinical presentation:**

A 21 y old MK female was well 4 weeks ago , she developed abdominal pain and diarrhea. Gradually the frequency of stools increased to 10/ day with blood tinged stools. She developed fever, loss of appetite , wt. loss of 9-10lbs , stools studies were negative

**Labs :**

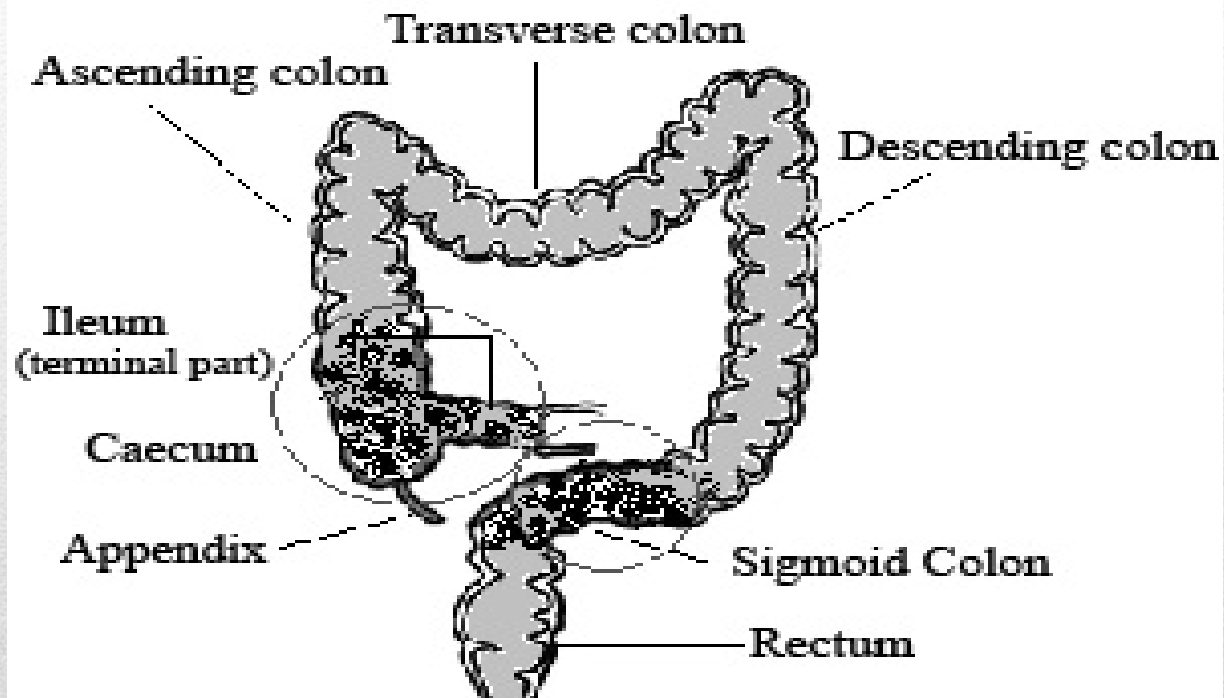
Hb-9.1gm/dl

Albumin 2.1gm/dl

Colonoscopy reveals Crohn's disease terminal ileal ulceration

# Case

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Crohn's disease: Areas affected

## IBD results from a complex interplay

- Genetics,
- Immune
- Environmental factors .
- Malnutrition.



# Introduction

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## The area where most digestion occurs

- Which include the duodenum, jejunum, and ileum.
- Protein is metabolized to amino acids,
- Fats to glycerol and fatty acids
- Carbohydrates to mono- and disaccharides.

# **Role of small intestine**

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- 50/100000- crohn's
- 160/100000-ulcerative colitis
- High in northern Europe
- Increased risk among South Asians & Jews
- More in females
- 60% to 75% of patients with Crohn's disease experience malnutrition
- Children are at especially high risk for decreased bone mass and growth stunting
- In Pakistan no confirmed data exist but prevalence is 25-30 % in patient admitted AKUH with G1 bleed as per rough estimates .

*Kwon JH, Farrell RJ. Probiotics and inflammatory bowel disease. Biodrugs 17(3), 2003.*

*Escher JC, Taminiou JA. Treatment of inflammatory bowel disease in childhood. Scand J Gastroenterol 48-50, 2001.*

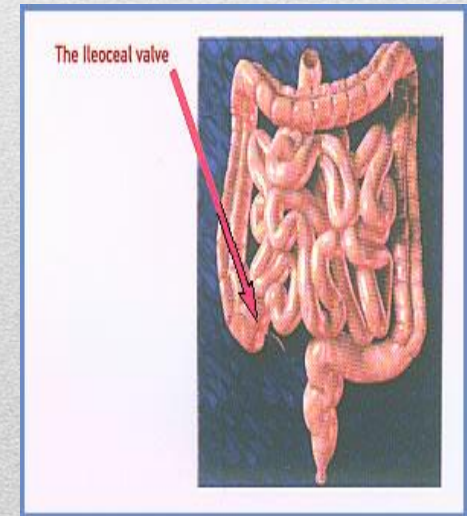


# Prevalence of IBD & risk

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## Resection of the ileum

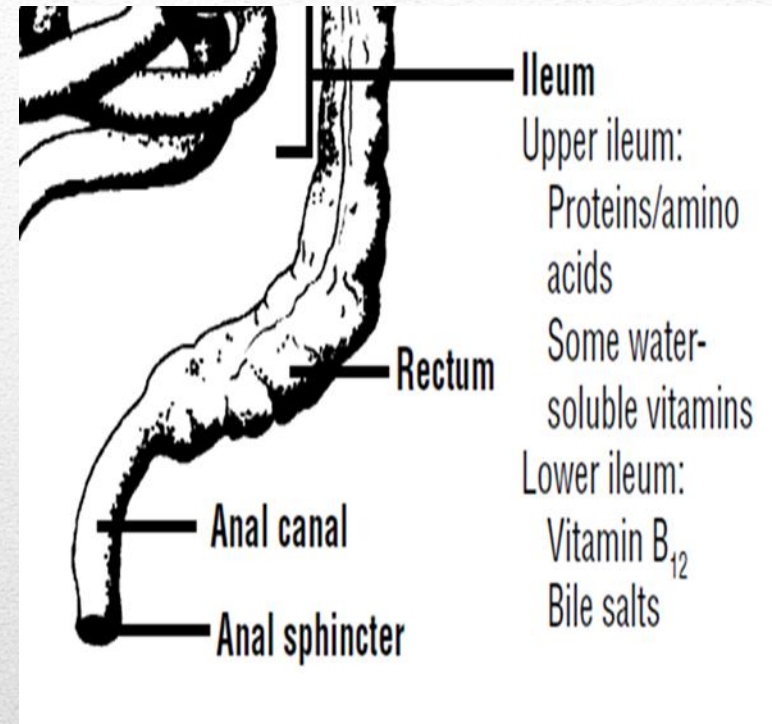
- Severe malabsorption and steatorrhea may occur, depending on the amount of the ileum that has been resected.
- Significant bacterial overgrowth can occur with the removal of the ileocecal valve. This occurs because of the lack of a barrier between the ileum and the colon and the migration of bacteria from the colon to the ileum.
- Bacterial overgrowth can cause malabsorption of carbohydrate, protein, fat, and fat-soluble vitamins.
- Osteopenia (prevalence between 40% to 50%)
- Osteoporosis (prevalence between 5% to 36%)



## Consequences of ileum resection

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- Diarrhea
- Rapid transit
- Malabsorption
- B12 deficiency
- Deficiency of fat-soluble vitamins
- Calcium deficiency
- Magnesium deficiency
- Electrolyte disturbances



# Clinical Features of resection

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- Decreased nutrient intake
- Fear of eating
- Anorexia, nausea, vomiting, diarrhea, abdominal pain
- Restrictive diets
- Medication side effects
- Oral ulcerations /taste changes
- Inflamed/ulcerated mucosa
- Blood loss through GI bleed
- Mal-absorption/ mal-digestion,
- Drug nutrient interactions
- Sulfasalazine is folic acid antagonist & may cause megaloblastic anaemia
- Lactose intolerance
- Deficiencies of iron, folate & vitamin C

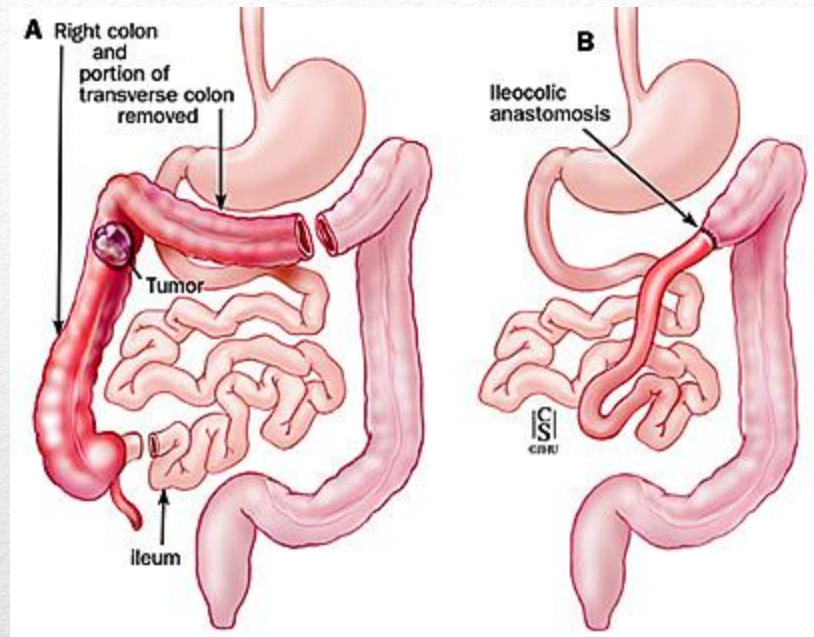
**what factors do you think will alter  
nutrition status in IBD**





**Back to Patient**

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**Patient is planned for resection 100cm of terminal ileum with formation of ileo-colonic anastomosis**

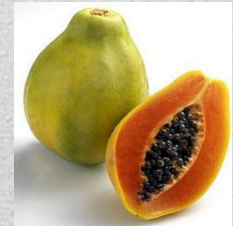
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- PN
- EN
- Oral
- OR ---Bowel rest

**What would be her Nutritional Support**

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- Bowel rest is suggested to be used but no significant benefit has been noted in researches.
- In a prospective randomized trial a group was assigned bowel rest with PN & other group was started on low residue oral diet for 4 weeks , at the end of 4 weeks both groups showed decrease in disease activity .
- There has been increased interest in elemental diet but a European Crohn's Society trial showed that there was no added benefit



# Nutritional Support

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**SHE WAS STARTED ON ORAL DIET &  
PEPTAMEN AS SUPPLEMENT**

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- Calories requirement-30-40kcal /kg /day
- Proteins -1.5-2.0 gms / kg /day

# **Caloric & Protein needs**

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- Small divided meals at frequent intervals.
- Food supplementation or fortification .
- Adequate fluid intake in presence of loose motions.
- Unnecessary food restriction without checking tolerance should be avoided.
- Omega three fatty acids supplementation prevents relapse , fish oils have been shown to reduce activity of macrophages, modulate secretory functions of cytokines & free radicals.

*Endres et al , The effects of dietary supplementation with n-3 fatty acids on synthesis of interleukin & tumor necrosis factor .  
N .Engl J Med 320,(1989*



# General aspects of mgt

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- Elemental or polymeric liquid diets or complete bowel rest with parenteral nutrition is used to induce remission .
- Enteral or parenteral support in pre operative malnourished patients is advised.
- Medium chain triglycerides are easier to digest , can be added but generally use less fat .
- Fat soluble vitamins (A,D,E) supplementation is needed
- People with strictures need to avoid fibrous foods , dried foods & nuts .
- Fluid intake of 35ml/kg/day & any daily symptoms related losses should be included .
- Lactose alternative should be included .



# What is our experience in AKUH

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- Meal replacement formula – Peptamen – semi elemental formula
- Calcium gluconate or carbonate -500mg BD
- Magnesium gluconate or oxide-1-4g qd
- Ferrous sulfate -325mg qd
- Vitamin A- 10,000-25,000U qd
- Vitamin D- 10,000-50,000U 1-3 times /week
- Vitamin E-400-1000mg qd
- Folic acid -1mg qd
- Vitamin B12-1000mgqd
- Pancreatic enzymes- 1-3 tabs with meals
- Bile acid binding resin –cholestyramine 4-8g BID



# Supplements & agents

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- Pancreatic enzymes- 1-3 tabs with meals
- Bile acid binding resin –cholestyramine 4-8g BID

( in case of fatty stools or steatorrhea bile acid binders & pancreatic enzymes are used )

# **Rationale for these medications**

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- Meta-analysis have shown that remission rates on EN are 60%, oral diet with low residue has shown to reduce Crohn's Disease activity , a mixture of elemental diet + polymeric diet seems to work. Children have better growth & development with EN

# Role of EN

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- She does well for 5 days then she has smelly discharge from wound , investigations confirm enterocutaneous fistula formation in mid jejunum



- Since there is leakage from fistula , if leakage is high it result in alternation in nutritional status , due to losses of proteins , fluid electrolyte & zinc

## **What the Dietitian needs to monitor in a Patient with Fistula**

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**WHAT WOULD BE NUTRITIONAL SUPPORT NOW**

**Bowel rest & TPN**

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- TPN was considered as primary therapy in CD, however a key study in 1988 showed that bowel rest was not the major factor in achieving remission
- TPN carries the risk of sepsis, liver disorders, bacterial translocation & high cost.

## Role of TPN

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- MK is put on bowel rest with TPN , out put decreases , wound heals , in 3<sup>rd</sup> week she resumes oral nutrition with no further fistula drainage





# **Role of prebiotics & probiotics**

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- We have healthy bacteria in our gut which kill any dangerous invaders & helps make Vitamin K in our body .
- If we lose balance of these healthy organism due to stress antibiotics , poor diet choices .



# **Prebiotics and Probiotics: Restore the balance**

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- Probiotics are live microorganisms which confer health benefits to host , disturbance in intestinal flora can trigger IBD. Probiotics have high efficiency in ileal anastomosis.
- Probiotic bacteria like lactobacilli are naturally found in fermented foods like sauerkraut and yogurt.

*Gionchetti P Rizzello F helwig et al prophylaxis onset with probiotic therapy ; A Double –blind placebo- controlled trial. Gastroenterology 2003;124 (5) ; 1202-1209*

# Role of probiotics

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- Prebiotics are fructooligosacchrides(FOS) & galactooligosacchrides (GOS) are specific short chain carbs that are healthy for GUT
- a combination of prebiotics & probiotics are called synbiotics , their fermentation releases SCFA which is immuno-regulatory



## **Role of prebiotics & synbiotics in CD**

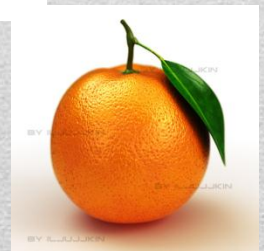
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## Prebiotics in Ulcerative Colitis

Author	Year	Fiber	Study	Outcome
Fernandez-Banares	1999	Plantago ovata seed fiber 10 grams BID	Fiber +/- mesalamine in patients in remission	Equal to mesalamine in maintenance of remission
Kanauchi	2002 2003	Barley 20–30 grams	Mild to moderately active UC	Decreased disease activity
Hallert	2003	Oat bran 60 grams (fiber 20 grams)	Patients in remission	Decreased abdominal pain, increased fecal butyrate
Welters	2002	Inulin 24 grams	IPAA	Decreased pouch inflammation

Source: Adapted from References 168 to 171.

# Meta –analysis





# **How to Document NCP**

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- Dietitians working with patients who have IBD disease should review the signs and symptoms obtained in the nutrition assessment and diagnose nutrition problems based on these signs and symptoms.

Nutrition diagnoses from the list below as well as other diagnoses may be present.

- Inadequate oral intake (NI-2.1)
- Malnutrition (NI-5.2)
- Inadequate fluid intake (NI-3.1)
- Underweight (NC-3.1)
- Inadequate mineral intake (specify) (NI-5.10.1)

# Nutrition Diagnosis





# Food & feeding issues

Common Nutrition Problem	Etiology of Nutrition Problem
Energy/protein	Insufficient intake
	Anorexia
	Fear of abdominal pain and diarrhea after eating
	Increased protein needs (losses from gastrointestinal tract caused by inflammation)
	Catabolism (when infection or abscesses present)
	Healing from surgery
Fluid and electrolytes	Short bowel syndrome
Iron	Blood loss, inadequate diet
Magnesium, zinc	Intestinal losses, especially from short bowel syndrome
Calcium and vitamin D	Long-term steroid use
	Decreased intake of dairy foods as result of lactose-restricted diets
Vitamin B-12	Surgical resections of stomach (loss of intrinsic factor) and/or terminal ileum (site of absorption)
Folate	Medications used to treat inflammatory bowel disease

Adapted with permission: Nahikian-Nelms M, Sucher K, Long S. Diseases of the Lower Gastrointestinal Tract. *Nutrition Therapy and Pathophysiology*. Belmont, CA: Wadsworth/Thomson Learning; 2007

- Inadequate oral intake (NI-2.1) related to discomfort after eating & diarrhea as evidenced by 1/3 normal intake for past 5 days.
- Inadequate mineral intake (iron) (NI-5.10.1) blood loss with diarrhea as evidenced by estimated intake approximately 50% of requirements.
- Altered GI function by ileal resection as evidence by poor diet intake leading to mal-absorption & B12 deficiency

# Sample PES or Nutrition Diagnostic Statements

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- Nutrition intervention will depend on the functional status of the gastrointestinal tract. During acute exacerbations of both ulcerative colitis and Crohn's disease, extent of diarrheal output, obstruction, surgical and bleeding may direct the level of nutritional intervention. Enteral nutrition or parenteral nutrition is used as a supportive mechanism when an oral diet cannot meet nutritional needs (Eiden 2003).

# Nutrition Intervention



- Examples of the approved nutrition monitoring and evaluation terminology that may apply to patients with inflammatory bowel disease include:
  - Level of knowledge
  - Vitamin profile
  - Mineral profile
  - Weight/weight change

## **Nutrition Monitoring & Evaluation**



