



IBD

● Objectives:

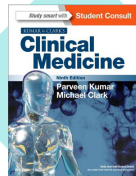
- Describe & Distinguish the Inflammatory bowel disease (IBD) is comprised of two major disorders: Ulcerative colitis (UC), Crohn's disease (CD).
- Know the disorders have both distinct and overlapping pathologic and clinical characteristics.
- know the Genetic factors: NOD2/CARD15.
- Know the ENVIRONMENTAL FACTORS: Smoking, Appendectomy: protect UC, Diet.

[Color index : **Important** | **Notes** | Extra]

[[Editing file](#) | [Feedback](#) | [Share your notes](#) | [Shared notes](#) | [Twitter](#)]

● Resources:


- 435 slides



- Done by: Malak Alshareef & Ghadah Alqasimi
- Team sub-leader: Jwahr Alharbi
- Team leaders: Khawla AlAmmari & Fahad AlAbdullatif
- Revised by: Ahmad Alyahya & Luluh Alzeghayer

"Medicine is an art, nobody can deny it."

Inflammatory Bowel Disease

 [IBD](#) : 8:58 minutes

● Definition:

IBD is comprised of two major disorders ulcerative colitis (UC) and crohn's disease(CD). There is a degree of overlap between these two conditions in their clinical features histological and radiological abnormalities, so it's clinically useful to distinguish between these two conditions because of differences in their management.

In 10% of cases of IBD causing colitis a definitive diagnosis of either UC or CD is not possible and the diagnosis is termed colitis of undetermined type and etiology (CUTE).

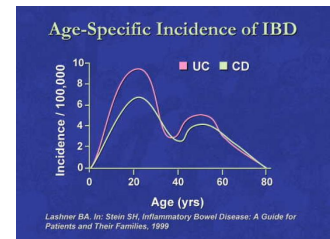
● Epidemiology:

-More common in the west, but the incidence is increasing in the developing countries including Saudi Arabia.

-Jewish people are more prone to inflammatory bowel disease than any other ethnic group.

-Approximately 25% patients are diagnosed before their 18th birthday.

- The peak: 15-30 years. **1100 cases in KKHU 2009 until now.**
- A second peak is 50 years old **not in Saudi Arabia.**



● Etiology:

Both diseases has no clear cause, but there multiple factors which hypothesized to Play Role:

1- Environmental factors:					
Smoking	Appendectomy	Persistent infection	Defective mucosal integrity	Dysbiosis	Dysregulated immune response
-increases the chance for crohn's disease. And they do not respond to treatment -has a protective role in Ulcerative colitis.	have a protective role in Ulcerative colitis.	-mycobacteria -helicobacter sp. -measles,mumps. -listeria. -toxigenic E.coli.	-altered mucus. -increased permeability. -cellular starvation. -impaired restitution.	(change in microbiota of the gut): ↓ protective bacteria ↑ aggressive commensals	-loss of tolerance -aggressive cellular activation. -defective apoptosis.
2- Diet:	Western diet and Frozen food increase the chance of developing IBD, especially in children less 10 year-old				
3-Genetic factors:	NOD2/CARD15				

Because of different etiology, response to treatment is different.

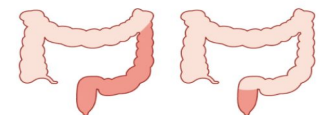
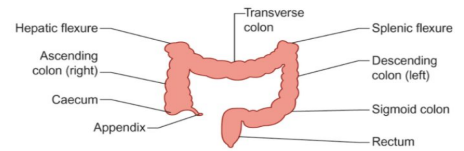
Ulcerative Colitis

● Definition:

UC is a chronic inflammatory disease characterized by recurrent episodes of inflammation limited to the mucosal layer of the rectum and colon. **Starts at the rectum then extends proximally.**

General characteristics

- It may occur at any age (usually begins in adolescence or young adulthood).
- Involves the rectum **in all cases** and can involve the colon either partially or entirely:
 - Ulcerative proctitis: rectum alone.
 - Ulcerative proctosigmoiditis: rectum and sigmoid colon.
 - Left-sided colitis: disease that extends beyond the rectum as far proximally as the splenic flexure.
 - Extensive colitis: beyond the splenic flexure.
 - Pancolitis: whole colon.



and

A and B: 40-50% of patients C and D : 30-40% of patients E: 20% of patients

Extensive colitis and Pancolitis has more chance for complications.

- The course is unpredictable and characterized by periodic exacerbation and periods of complete remission.

● Blood in the stool could be:


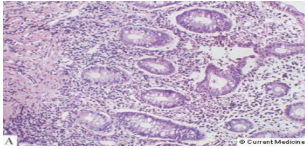
- Proctitis: fresh blood or blood-stained mucus that is either mixed with the stool or streaked on the surface. The stool could be normal or hard.
- If the disease extends beyond the rectum, blood is usually mixed with stool or grossly **bloody diarrhea** may be noted.
- If the disease is severe, patients pass liquid stool containing blood, pus, or fecal matter.

Clinical features

- Diarrhea (bloody diarrhea). **Frequent, small volume diarrhea**
- Rectal bleeding (Hematochezia)
- Crampy abdominal pain.
- Tenesmus
- Passage of mucus.
- **Urgency (they cannot hold the stool).**
- Extraintestinal symptoms: skin lesions, jaundice, arthritis.
- In moderate to severe disease: anorexia, nausea, vomiting, fever, weight loss.

Diagnosis

- **NO SINGLE MODALITY IS ENOUGH FOR DIAGNOSIS!** in both UC and CD
 - **Combination** of clinical picture, laboratory, endoscopy, pathology are required for the diagnosis of UC.
 - Colonoscopy and mucosal biopsy are the **gold standard** investigation for the diagnosis of UC :
- 1- stool culture for *C. difficile*, ova and parasites - **to rule out infectious diarrhea.**
 - 2- fecal leukocytes.
 - 3- Colonoscopy:
 - Vascular markings are lost
 - Petechiae, exudates, touch friability and frank hemorrhage may be present.
 - **Uninterrupted involvement of rectum or colon - no skip lesions.**

Pathology	<ul style="list-style-type: none"> Inflammation is not transmural, it is limited to the mucosa. PMNs accumulate in the crypts of the colon (crypt abscesses); there is branching of crypts, atrophy of glands, and loss of mucin in goblet cells. This marks chronicity to differentiate it from gastroenteritis. <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	
Complications	<ul style="list-style-type: none"> Hemorrhage. Perforation. Colon cancer: The risk correlates with extent and duration of colitis. However, in distal proctitis there is no increased risk for colorectal cancer. Toxic megacolon: is the leading cause of death in UC and affects <5% of patients. It is associated with a risk of colonic perforation. (It is a transverse colon with a diameter of more than 5-6 cm with loss of haustration) Iron deficiency anemia Electrolyte disturbances and dehydration secondary to diarrhea Strictures: usually malignant, but could be benign Sclerosing cholangitis (SC) Cholangiocarcinoma—Half of all bile duct cancers are associated with UC. Growth retardation. Narcotic abuse. Psychosocial issues (e.g., depression) often due to chronicity and the disabling nature of the disease. 	
Goals of therapy In both CD and UC:	<ul style="list-style-type: none"> Induce and maintain remission. Ameliorate symptoms. Improve pts quality of life. Because they are young Adequate nutrition. Prevent complication of both the disease and medications. 	
Management	<p>1- Medical: Rule out infections before start treatment (it may be simple gastroenteritis)</p> <p>a. 5-ASA: Sulfasalazine (topical application as a suppository) is the mainstay of treatment. Preferred over topical steroids because they are effective as <u>maintenance therapy</u>. <u>Remission rates as high as 93% have been reported. Most used and effective in UC, does not work for crohn's!</u></p> <ul style="list-style-type: none"> It is effective in maintaining remissions. 5-ASA (mesalamine) is the active component. 5-ASA enemas can be used for proctitis and distal colitis. <p>b. Systemic corticosteroids are used for <u>acute exacerbations</u>. <u>they induce remission only</u></p> <ul style="list-style-type: none"> Systemic: Prednisolone Local acting: enema. <p>c. Immunomodulators agents in patients with refractory disease may prevent relapses but are not effective for acute attacks. (Azithyoprine - Methotrexate) <u>remission only</u></p> <p>d. Anti TNF therapy (infliximab): if not respond <u>remission & maintenance</u></p>	<p>2- Surgical: often curative (unlike Crohn's disease) and involves total colectomy. Indications for surgery include:</p> <ol style="list-style-type: none"> Severe disease that is debilitating, refractory, and unresponsive to medical therapy Toxic megacolon (risk of perforation), obstruction (due to stricture), severe hemorrhage, perforation Fulminant exacerbation that does not respond to steroids Evidence of colon cancer or increased risk of colon cancer Growth failure or failure to thrive in children Systemic complications. <p>UC : TOTAL colectomy Crohn's : segmental resection</p>

Crohn's disease (CD)

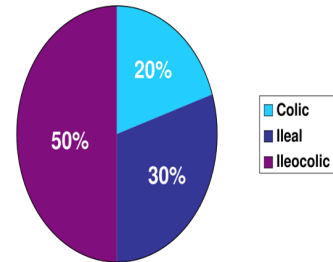
- **Definition:**

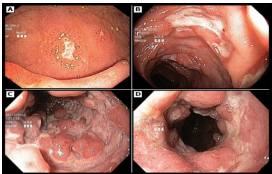

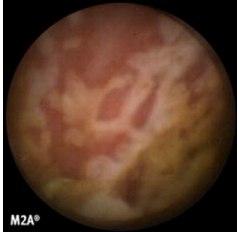
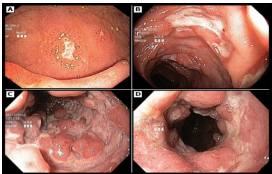

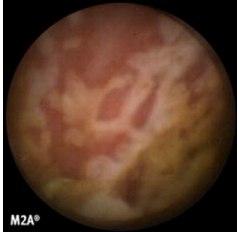
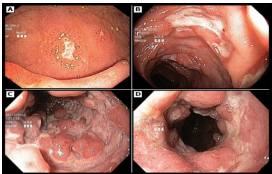

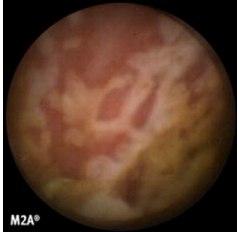
Is a disorder of uncertain etiology that is characterized by chronic transmural inflammation of the gastrointestinal tract. It's also called (regional enteritis).

- **Location:**

Can affect any part of the GI tract (from mouth to anus). Most commonly affect the small bowel, specifically the **terminal ileum**

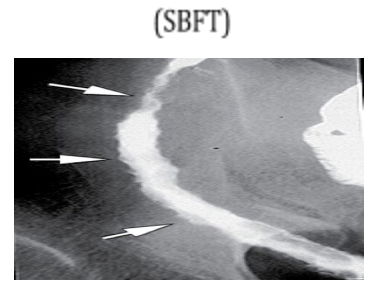
- 40% to 50% of patient have the disease in the **terminal ileum and cecum (ileocolic)**
- 30% of patient have the disease confined to the **small intestine**.
- 20% to 25% of patients have the disease confined to the **colon**.
- In < 5%, it affects **Upper GI (mouth, stomach, esophagus)**.



<p>Clinical manifestation</p>	<ul style="list-style-type: none"> ● Non-bloody diarrhea because of its distant location (and that's why they present late since there is no early alarming symptoms) ● Abdominal pain (usually RLQ pain), nausea and vomiting. ● Malabsorption and weight loss. ● Fever, Fatigue and malaise. ● Extraintestinal manifestation : Uveitis, Arthritis, aphthous oral ulcers, pyoderma gangrenosum. (more details will be mentioned below). 					
<p>KEY POINTS IN CD :</p>	<ul style="list-style-type: none"> ● Terminal ileum is the hallmark location ● Skip lesions: discontinuous involvement ● Fistulae ● Luminal strictures ● Noncaseating granulomas ● Transmural thickening and inflammation (full-thickness wall involvement) results in narrowing of the lumen ● Mesenteric "fat creeping" onto the antimesenteric border of small bowel 					
<p>Diagnosis</p>	<ol style="list-style-type: none"> Compatible clinical history. Endoscopic findings: (the most accurate test) : <table border="1" data-bbox="293 1507 1591 2032"> <tr> <td data-bbox="293 1507 971 1654"> <p>A. Colonoscopy:</p> </td> <td data-bbox="971 1507 1591 1654"> <p>B. Wireless capsule endoscopy. (helpful in pediatrics) useful for small bowel, no need in UC</p> </td> </tr> <tr> <td data-bbox="293 1654 971 2032"> <p>Endoscopic features include focal ulcerations adjacent to areas of normal appearing mucosa along with polypoid mucosal changes that give a cobblestone.</p>  </td> <td data-bbox="971 1654 1591 2032">   </td> </tr> </table> 		<p>A. Colonoscopy:</p>	<p>B. Wireless capsule endoscopy. (helpful in pediatrics) useful for small bowel, no need in UC</p>	<p>Endoscopic features include focal ulcerations adjacent to areas of normal appearing mucosa along with polypoid mucosal changes that give a cobblestone.</p> 	 
<p>A. Colonoscopy:</p>	<p>B. Wireless capsule endoscopy. (helpful in pediatrics) useful for small bowel, no need in UC</p>					
<p>Endoscopic features include focal ulcerations adjacent to areas of normal appearing mucosa along with polypoid mucosal changes that give a cobblestone.</p> 	 					

3. Imaging studies in a patient: more in crohn's

- a. small bowel follow through (SBFT)
- b. computed tomography: CTS or CT enterography
- c. Magnetic resonance imaging (MRI) or **MR enterography** most used



4. Serologic markers: (used when the diagnosis still unclear) :

- Inflammatory marker: ERS, CRP (differentiate between IBS and IBD, in IBS there is no inflammation)
- Antibody tests: (differentiate between CD and UC.)
 - Antineutrophil cytoplasmic antibodies (pANCA) : negative in CD
 - Anti-Saccharomyces cerevisiae antibodies (ASCA) : **positive in CD**
- Stool markers: fecal calprotectin (differentiate between IBS and IBD.)

Mangement:

1- Medical: **Rule out infections**

- a. 5-ASA: Sulfasalazine:
 - This is useful if the colon is involved. 5-ASA (mesalamine) is the active compound and is released in the colon, it is more useful in UC than in Crohn's disease.
 - 5-ASA compounds block prostaglandin release and serve to reduce inflammation.
 - There are preparations of 5-ASA that are more useful in distal small bowel disease.
- b. Metronidazole: if no response to 5-ASA.
- c. corticosteroids (systemic = prednisone or long acting = budosonide): for acute exacerbations and if no response to metronidazole
- d. Immunomodulators (azathioprine, Methotrexate): in conjunction with steroids if the patient does not respond to above agents.
- e. Anti TNF therapy (infliximab)
- f. Bile acid sequestrants (cholestyramine or colestipol): for patients with terminal ileal disease who cannot absorb bile acids
- g. Antidiarrheal agents generally not a good choice (may cause ileus)

2- Surgical: eventually required in most patients (segmental resection)

- a. Reserve for complications of Crohn's disease.
- b. Involves segmental resection of involved bowel.
- c. Disease recurrence after surgery is high up to 50% of patients experience disease recurrence at 10 years postoperatively.
- d. Indications for surgery include small bowel obstruction, fistulae (especially between bowel and bladder, vagina), disabling disease, and perforation or abscess.

3- Nutritional supplementation and support:

Parenteral nutrition is sometimes necessary.

Complications

1. Phlegmon/abscess: walled off inflammatory mass without bacterial infection **Phlegmon is an inflammatory sterile mass while abscess is a collection of fluids and pus caused by bacteria**
2. Fistulae Between bowel and other viscus: **more in CD than UC "because it is transmural"**
 - a. With other loop of the intestine (enteroenteral).
 - b. With bladder (enterovesical).
 - c. Vagina (enterovaginal).
 - d. With skin (enterocutaneous)
3. Anorectal diseases (in 30%) Include fissures, abscesses, perianal fistulas (almost exclusively to Crohn's)
4. Severe oral involvement: aphthous ulcers.
5. Esophageal involvement: odynophagia and dysphagia.
6. Gastroduodenal CD: upper abdominal pain and symptoms of gastric outlet obstruction.
7. Gallstones

Extraintestinal manifestations (BOTH CD AND UC)

CD and ulcerative colitis share a number of extraintestinal manifestations :

- **Eye lesions:**
 - Episcleritis: parallels bowel disease activity.
 - Anterior uveitis: independent course.
 - iritis.
- **Skin lesions:**
 - **Erythema nodosum:** especially in Crohn's disease; parallels bowel disease activity. **painful**
 - **Pyoderma gangrenosum:** especially in UC; parallels bowel disease activity in 50% of cases. **painless**
- **Arthritis:** most common extraintestinal manifestation of IBD. **may involve large or small joints. Small joints arthritis is not affected by the activity of the disease (won't improve)**
 - Migratory monoarticular arthritis: parallels bowel disease activity (coincides with exacerbation of colitis).
 - Ankylosing spondylitis: Patients with UC have a 30 times greater incidence of ankylosing spondylitis than the general population; the course is independent of the colitis.
 - Sacroiliitis: does not parallel bowel disease activity
- Thromboembolic-hypercoagulable state: can lead to deep venous thrombosis (DVT), pulmonary embolism (PE), or a cardiovascular accident (CVA)
- Idiopathic thrombocytopenic purpura.
- Osteoporosis.
- Gallstones in Crohn's disease (ileal involvement).
- Sclerosing cholangitis in UC.
- Vitamin B12 deficiency



Feature	CD	UC
Characteristics of CD and UC		
Location	SB or colon	colon
Anatomic distribution	Skip lesions	Continuous
Rectal involvement	Rectal spare	Involved in >90%
Gross bleeding	Only 25%	Universal
Peri-anal disease	1/3	Rare
Fistulization	Yes	No
Granulomas	30%	No
Endoscopic features of CD and UC		
Mucosal involvement	Discontinuous	Continuous
Aphthous ulcers	Common	Rare
Surrounding mucosa	Relatively normal	Abnormal
Longitudinal ulcer	Common	Rare
Cobble stoning	In severe cases	No
Mucosal friability	Uncommon	Common
Vascular pattern	Normal	distorted
Pathologic features of CD and UC		
Transmural inflammation	Yes	Uncommon
Granulomas	30%	No
Fissures	Common	Rare
Fibrosis	Common	No
Submucosal inflammation	Common	Uncommon

Cases

1. Which of the following gastroenterological conditions would give rise to finger clubbing?

- A. Hepatocellular carcinoma
- B. Ulcerative colitis
- C. Irritable bowel syndrome
- D. Hepatocellular carcinoma
- E. Pancreatic carcinoma

2. A 28-year-old man undergoes a sigmoidoscopy for longstanding diarrhoea and weight loss. On visualization of the rectum, the mucosa appears inflamed and friable. A rectal biopsy is taken and the histology shows mucosal ulcers with inflammatory infiltrate, crypt abscesses with goblet cell depletion. From the list of answers below, which is the most likely diagnosis describing the histology report?

- A. Crohn's disease
- B. Pseudomembranous colitis
- C. Irritable bowel syndrome
- D. Ulcerative colitis
- E. No diagnosis – the report is inconclusive

3. You are told by your registrar that one of the clinic patients has been admitted with a 'flare up' of ulcerative colitis (UC) which he reports as being severe. From the list of answers below, select the parameters which are likely to reflect a severe flare up of ulcerative colitis:

- A. Fewer than four bowel motions per day with large amounts of rectal bleeding
- B. Between four and six bowel motions per day with large amounts of rectal bleeding
- C. More than four bowel motions per day with large amounts of rectal bleeding
- D. More than five bowel motions per day with large amounts of rectal bleeding
- E. More than six bowel motions per day with large amounts of rectal bleeding

4. You read a report which was handwritten in a patient's medical notes who you suspect has inflammatory bowel disease. The report reads, '... there is cobblestoning of the terminal ileum with the appearance of rose thorn ulcers. These findings are suggestive of Crohn's disease'. Select the most likely investigation that this report was derived from:

- A. Colonoscopy
- B. Sigmoidoscopy
- C. Barium follow through
- D. Abdominal CT
- E. Abdominal ultrasound

5. You are asked to see a 29-year-old woman diagnosed with ulcerative colitis 18 months ago. Over the last 4 days she has been experiencing slight abdominal cramps, opening her bowels approximately 4–5 times a day and has been passing small amounts of blood per rectum. The patient is alert and orientated and on examination her pulse is 67, blood pressure 127/70, temperature 37.3°C and her abdomen is soft with mild central tenderness. PR examination is nil of note. Blood tests reveal haemoglobin of 13.5g/dL and a CRP of 9mg/L. The most appropriate management plan for this patient is:

- A. Admission to hospital for intravenous fluid therapy and steroids
- B. Oral steroid therapy + oral 5-ASA + steroid enemas + discharge
- C. Admission and refer to surgeons for further assessment
- D. Oral steroid therapy and discharge home
- E. Reassurance and discharge home with no treatment required

6. A 29-year-old anxious man is diagnosed with mild Crohn's disease. Due to time constraints, the patient was asked to come back for a follow-up appointment to discuss Crohn's disease in more detail. The patient returns with a list of complications he researched on the internet. Which of the following are not associated with Crohn's disease?

- A. Cigarette smoking reduces incidence
- B. Fistulae formation
- C. Abscessformation
- D. Non-caseating granuloma formation
- E. Associated with transmural inflammation

Answers

- 1. B.** Inflammatory bowel disease (e.g. ulcerative colitis and Crohn's disease) is a known gastroenterological cause of finger clubbing along with liver cirrhosis, primary biliary cirrhosis, oesophageal leiomyoma, coeliac disease and achalasia. Therefore, (B) is the most likely answer here.
- 2. D.** The most likely diagnosis is ulcerative colitis (UC) (D) based on the histological results of the rectal biopsy. The findings of inflammatory infiltrates coupled with mucosal ulcers, goblet cell depletion and crypt abscesses are highly suggestive of a diagnosis of UC. UC is described as a relapsing and remitting inflammatory bowel disorder of the colonic mucosa. The condition usually starts at the rectum (proctitis in 50 per cent) and spreads proximally, in a continuous fashion, to affect parts of the colon (e.g. left-sided colitis in 30 per cent) or the entire colonic tract (pancolitis in 20 per cent). UC tends not to spread beyond the ileocaecal valve but may cause a condition called 'backwash ileitis'. Histologically, Crohn's disease (A) is characterized by transmural, non-caseating granulomatous inflammation, coupled with fissuring ulcers, lymphoid aggregates and neutrophil infiltrates. Crohn's disease can affect any part of the GI tract from the mouth to the anus (but favours the terminal ileum in 50 per cent) and is also characterized by skip lesions (unaffected bowel between areas of active disease) whereas in UC, disease spreads from the rectum to the ileocaecal valve in a continuous fashion depending on the stage of disease. Pseudomembranous colitis (PC) (B) is characterized by the formation of an adherent inflammatory membrane (the pseudomembrane) overlying sites of mucosal injury within the colon. The histology of PC is described as small surface erosions of the superficial colonic crypts coupled with overlying accumulation of neutrophils, fibrin, mucus and necrotic epithelial cells forming a 'summit lesion'. The toxins (toxin A and B) produced by the gram-positive anaerobic bacillus, *Clostridium difficile*, are meant to be the cause of PC. There is normal histology of the bowel in irritable bowel syndrome (C).
- 3. E.** Using the Truelove and Witts criteria, which assesses the severity of UC, patients with UC opening their bowels greater than six times a day, and passing large amounts of blood per rectum, are considered to have severe UC. The other parameters that are recognized under the severe UC category are body temperature $>37.8^{\circ}\text{C}$, a pulse rate >90 beats per minute, a haemoglobin <10.5 g/dl and an ESR >30 mm/h. Moderate UC is defined as opening bowels between four and six times a day and passing moderate amounts of blood per rectum, body temperature between 37.1 and 37.8°C , a pulse rate between 70 and 90 beats per minute and haemoglobin between 10.5 and 11g/dL. Mild UC is classified as experiencing fewer than four bowel motions per day and passing small amounts, if not no blood, per rectum, normal body temperature, pulse rate <70 , haemoglobin of $>11\text{g/dL}$ and an ESR of <30 mm/h.
- 4. C.** The appearance of 'cobblestoning' and 'rose thorn ulcers' are radiological descriptions, seen in Crohn's disease, obtained from barium follow-through (A) investigations of the ileum. Lower GI endoscopy is preferred in establishing a diagnosis of IBD (either Crohn's or UC) because the operator is allowed direct visualization of the bowel and biopsies may be taken; skip lesions can be seen on direct visualization but the appearance of 'rose thorn ulcers' have only been described in barium radiography studies.
- 5. B.** From the patient's symptoms and signs, it is evident that she is experiencing a moderate flare-up of UC (Truelove and Witts criteria in the assessment of severity of UC). Treatment of UC flare-ups is targeted at inducing and maintaining remission. In this question, the patient, although experiencing mild abdominal cramps, frequent bowel motions and passing small amounts of blood per rectum, is systemically well. In addition, her haemoglobin levels are within normal range and her CRP is <10 mg/dL. Therefore, based on the information from the patient's history coupled with the blood test results, hospital admission would not be warranted. This patient can be treated as an outpatient and followed up either in clinic or by her GP. In terms of treatment regimens for moderate UC, patients are usually started on a course of steroids (e.g. 40mg of prednisolone), which is decreased on a weekly basis coupled with twice daily 5-ASA (e.g. mesalazine) and topical treatment of per rectum steroid foams (e.g. hydrocortisone). If symptoms do not resolve in 10–14 days, the patient is usually treated as severe UC. For mild UC, the aim of treatment again is to induce and maintain remission. This involves commencing a tapering dose of oral steroids with a 5-ASA. In some patients with distal disease, the use of steroid foams per rectum has shown to be of benefit. If symptoms improve, 5-ASA foams can be used instead of steroid foams. However, if symptoms do not improve in 10–14 days, the patient is usually treated as moderate UC. In severe UC, patients are usually admitted for intravenous fluid and steroid (e.g. IV hydrocortisone) therapy. Rectal steroids are also given. Patients are monitored closely and are examined on a twice daily basis to assess for abdominal distension, bowel sounds and abdominal tenderness. Worsening of these signs may be suggestive of toxic dilatation of the colon which would require surgical intervention due to the high risk of bowel perforation. Therefore, (B) is the most appropriate management plan.
- 6. A** Answers B–E are all facts that are associated with Crohn's disease, whereas cigarette smoking has been reported to increase the incidence of Crohn's disease but has found to be protective in UC; 70–80 per cent of non-smokers have UC compared to 50–60 per cent of patients who are smokers with Crohn's disease.