

# GASTROENTEROLOGY HANDBOOK

**A Guide for Junior Doctors Based On The Ward**

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# **INTRODUCTION**

## **Welcome to the Gastroenterology Handbook!**

We hope that this guide will be an invaluable tool in your day-to-day care of Gastroenterology patients. We recognize that these patients are often complex and acutely unwell, and hope that in this guide we can give hands-on advice to guide your management. We've provided practical tips, relevant guidelines and suggestions from our own experience.

In each acute condition, we provide a structure for assessment and focused examination. Remember that whenever you're reviewing an acutely unwell patient it's important to follow an 'ABCDE' approach and to perform initial resuscitation.

Whilst we hope that this guide will build your confidence, you should always call for senior help when dealing with an unwell patient, or if you're unsure. We've included specific pointers for patients who may require early intensive care support – it's best to anticipate this where possible and have conversations early, with the support of your seniors.

You'll rarely be working alone, and there are several members of the multidisciplinary team who will play an essential part in the management of each patient. We've identified some of the key members you should contact for help in each scenario.

The advice we've given is based on established guidelines, wherever possible. Be aware that there is likely to be some variation in practice between hospitals, and that you may also have local policies. If in doubt, your seniors should be able to point you in the direction of relevant local guidelines, for example antibiotic protocols.

## **Acknowledgments**

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Disclaimer – This Handbook has been prepared by members of the British Society of Gastroenterology with the aim of providing support to new doctors as they orientate themselves into new roles. It does not purport to be a comprehensive guide and it should not be relied upon as such. Nor is it a substitute for doctors studying and complying with the requirements of their individual trusts. This Handbook has been prepared on the basis of information available at the time. Neither the members of the British Society of Gastroenterology nor the British Society of Gastroenterology itself accepts any responsibility or liability for any loss or damage caused to the reader or to any third party as a result of any reliance being placed on the content of this Handbook.

# UPPER GI BLEED

You are urgently called by one of the nurses to see Mrs Smith, a 62 year old lady on the gastroenterology ward. She is feeling very dizzy after passing a large amount of loose black stool.

## What you need to find out

- ▶ Could this be a variceal bleed?  
Is the patient known to have cirrhosis?
- ▶ Are there any risk factors for peptic ulcer disease?  
NSAIDs, steroids, H.pylori
- ▶ Is the patient anti-coagulated?

## What you need to assess

- ▶ Haemodynamic status  
BP, HR, postural drop, cool peripheries
- ▶ Evidence of blood loss  
Haematemesis, melaena, rectal examination
- ▶ Look for signs of underlying cause of bleeding  
Signs of chronic liver disease, epigastric tenderness
- ▶ Calculate the Blatchford Score to assess the likelihood of intervention

## What you need to do

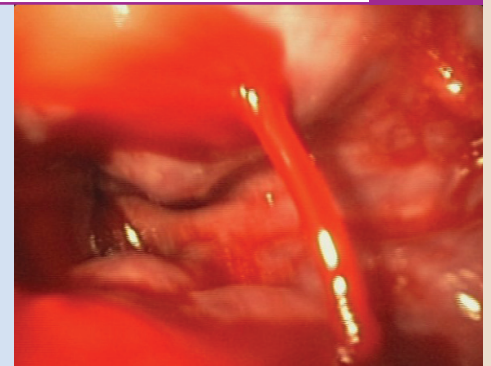
- ▶ IV access and bloods  
Group and save, cross match, FBC, clotting, LFT, U&E
- ▶ Resuscitate!  
Crystalloid or colloid will do whilst awaiting blood products
- ▶ Stop anticoagulants and antiplatelets  
Consider vitamin K and prothrombin complex
- ▶ Commence terlipressin 2mg QDS IV and prophylactic broad-spectrum antibiotics in variceal bleeds  
A history of ischaemic heart disease is a contraindication to terlipressin
- ▶ Arrange endoscopy  
Immediately if haemodynamically unstable or severe bleed. All others ideally within 24 hours
- ▶ Consider inserting a catheter to guide resuscitation

## Blatchford Score

Admission Risk Marker	Score
Blood urea mmol/l	
6.5-7.9	2
8-9.9	3
10-24.9	4
>25	6
Haemoglobin g/dL (men)	
12-13	1
10-11.9	3
<10	6
Haemoglobin g/dL (women)	
10-12	1
<10	6
Systolic BP mmHg	
100-109	1
90-99	2
<90	3
Other Markers	
Pulse >100	1
Melaena	1
Syncope	2
Hepatic Disease	2
Cardiac Failure	2

Score 0 = can be managed as an outpatient  
Score 5 = High risk, needs urgent endoscopy

Obtain good IV access - at least two large bore cannule



Latest guidelines suggest there is no added benefit in commencing IV omeprazole prior to endoscopy (if endoscopy is done promptly)

## Blood products

Make sure you know your local transfusion protocol – there may be a massive bleeding protocol to activate in the event of variceal haemorrhage

- Give platelets if actively bleeding and platelet count  $<50 \times 10^9/l$
- Give FFP (12-15ml/kg) if:
  - Fibrinogen level  $<1g/l$
  - PT more than 1.5 times normal
- Guidelines vary, but typically aim to transfuse packed red cells to a haemoglobin target of 7-9g/dL
- Give prothrombin complex to those on warfarin who are actively bleeding

## Who to call

- Call a senior early
- On-call GI bleed endoscopist out of hours – they can advise as to when endoscopy should be performed, but may require the patient to be resuscitated first
- Critical care – involve early in suspected variceal bleeding as the patient may require intubation for endoscopy or insertion of Sengstaken Blakemore tube



## Follow up

Use endoscopy findings to calculate Rockall score  
Post endoscopy mortality score

### Peptic ulcer bleeds

- Commence high dose IV PPI therapy  
80mg bolus omeprazole/pantoprazole followed by 8 mg/hr infusion for 72 hours
- Check H pylori screen and commence eradication therapy as required  
This may be a CLO or stool antigen test  
Eradication usually consists of a seven-day course of a PPI, amoxicillin, and either clarithromycin or metronidazole
- Ensure follow up OGD arranged in 6-8 weeks for gastric ulcers

### Variceal bleeds

- Continue terlipressin for 48 hours or until definitive banding is performed
- Commence beta blockers, once haemodynamically stable, to prevent further variceal bleeding
- Regular surveillance endoscopy will be required on an outpatient basis, arrange first one after 4-7 days

Continue low dose aspirin in patients with a history of CVA or MI if the GI bleeding has been controlled at endoscopy. Discuss with cardiology or stroke team regarding continuation of clopidogrel and warfarin.

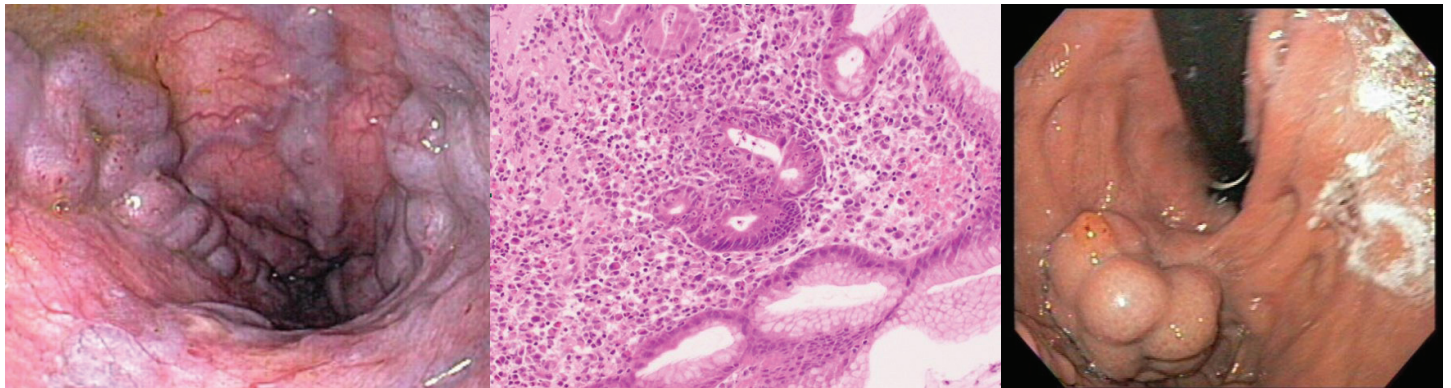


## Rockall Score

	Score 0	Score 1	Score 2	Score 3
<b>Age</b>	<60	60-79	>80	
<b>Comorbidity</b>	No major comorbidity		Cardiac failure, IHD, any major comorbidity	Renal failure, disseminated malignancy
<b>Shock</b>	No shock Systolic BP >100, HR <100	Tachycardia Systolic BP >100, HR >100	Hypotension Systolic BP <100, HR >100	
<b>Source of Bleeding</b>	Mallory Weiss Tear, no lesion	All other diagnoses	Malignancy of upper GI tract	
<b>Stigmata of Recent Bleeding</b>	None or dark spot		Bloof in upper GI tract, visible or spurting vessel	

**Total <3 = good prognosis**

**Total >8 = poor prognosis**



### References:

National Institute for Health and Care Excellence. NICE guidelines [CG141] Acute upper gastrointestinal bleeding: management. [Online]. Available from: <http://www.nice.org.uk/guidance/cg141> [Accessed 15 June 2015].

Scottish Intercollegiate Guidelines Network. Guideline 105: Management of acute upper and lower gastrointestinal bleeding. [Online]. Available from: <http://www.sign.ac.uk/guidelines/fulltext/105> [Accessed 15 June 2015].

6 Tripathi D, Stanley AJ, Hayes PC, et al. UK guidelines on the management of variceal haemorrhage in cirrhotic patients. Gut. 2015 Apr 17. [Epub ahead of print].

# ACUTE SEVERE COLITIS

*Miss Jones is a 32 year-old patient with ulcerative colitis. She is admitted to the ward with worsening abdominal pain and bloody diarrhoea.*

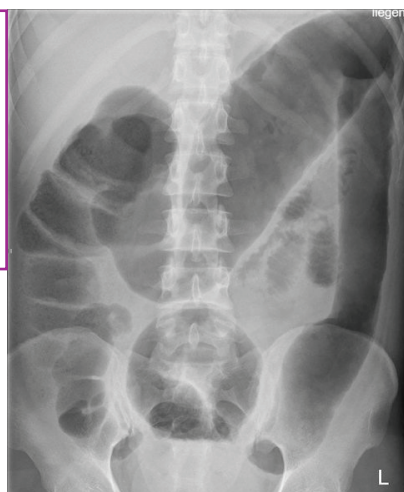
## What you need to find out

- ▶ When was the inflammatory bowel disease diagnosed?
- ▶ What is the disease extent?
- ▶ When the latest colonoscopy was and what did it show?
- ▶ Are there any histology results?
- ▶ What treatment has been given so far?
- ▶ Any risk factors for infective diarrhoea?  
Recent travel, eating out, unwell contacts

## What you need to assess

- ▶ Severity of disease  
Assess according to Truelove and Witt criteria for any signs of severe disease
- ▶ Nutritional status  
Patients with poorly-controlled or acute severe colitis are likely to require nutritional supplementation
- ▶ Complications  
Anaemia, fluid depletion, megacolon and perforation

It can be easy to underestimate abdominal pain in patients on steroids – get an erect CXR and AXR



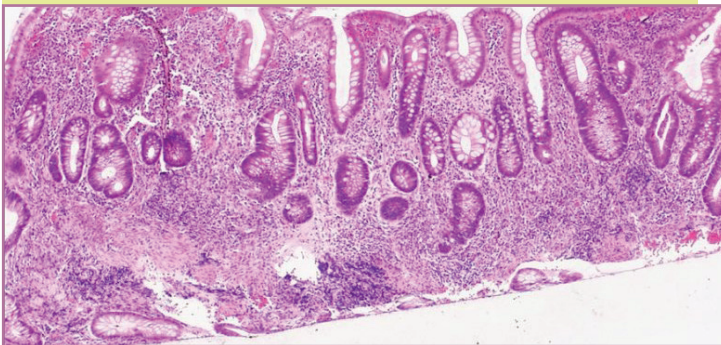
## What you need to do

<b>Urgent</b>	FBC, U&E, LFT, ESR/CRP, albumin, ferritin, transferrin saturation, vitamin B12, folate, group and save Abdominal X-ray and erect chest X-ray Stool C&S x 4 and CDT
<b>Soon</b>	Hepatitis / HIV / TB screen Magnesium and cholesterol TPMT levels (prior to starting azathioprine, if not already done) and thiopurine metabolites (if already on azathioprine) CMV PCR for viral DNAFlexible sigmoidoscopy and biopsy
<b>Ongoing</b>	Stool chart Daily FBC, U&E, LFT, CRP, glucose, albumin Regular repeat AXR especially if signs of distention or deterioration

- ▶ IV fluid and electrolyte replacement  
Patients with diarrhoea often require potassium, magnesium and phosphate supplementation.  
This may need to be IV as oral salt replacement can worsen diarrhoea
- ▶ Blood or iron transfusion to maintain haemoglobin >10 g/dl
- ▶ Stop anticholinergics, opiates and anti-diarrhoeals where possible  
These agents risk precipitating colonic dilatation
- ▶ Commence VTE prophylaxis  
Colitis is a pro-thrombotic state, and anticoagulation is required even in the presence of bloody diarrhoea
- ▶ Commence IV hydrocortisone 100 mg QDS
- ▶ If infective diarrhoea suspected as a significant differential commence antibiotics according to local policy
- ▶ Review by consultant gastroenterologist within 24 hours

### Truelove and Witt Criteria

	Mild	Moderate	Severe
Number of bloody stools per day	<4	4-6	>6
Temperature	Afebrile		>37.8
Heart rate	Normal		>90
Haemoglobin	>11	10.5-11	<10.5
ESR	<20	20-30	>30



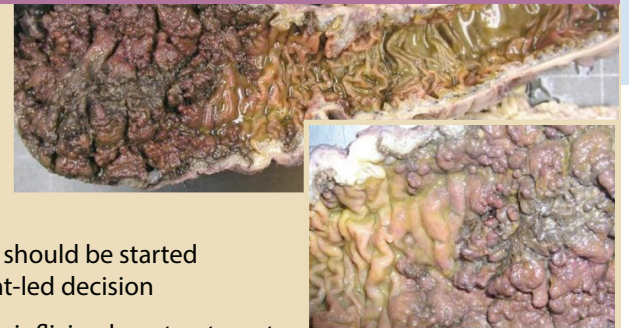
Thiopurine methyl-transferase (TPMT) is the enzyme which metabolises azathioprine (AZT). Patients with polymorphisms will be at higher risk of toxicity with AZT, so TPMT levels should be checked in all patients before starting therapy. This test only needs to be done once!

### Who to call

- Surgical team – if patients are developing acute or fulminant colitis, an emergency colectomy may be required. It is best if both the patient and surgeons are prepared for this
- IBD nurse specialist – a really useful contact, and can help patients understand the psychosocial considerations of living with IBD
- Dietician – many patients with IBD are malnourished and require additional nutritional support

### Day 3 – decision time

- A daily assessment of the patient's response to steroids should be made, in terms of their Truelove and Witt score, and clinical status
- If there has not been a significant improvement, rescue therapy should be started with either ciclosporin or infliximab – this should be a consultant-led decision
- It is important to check hepatitis B and TB status prior to starting infliximab, as treatment can lead to reactivation
- Check magnesium and cholesterol levels before starting ciclosporin. Low serum levels can increase the risk of neurotoxicity
- Patients who do not improve on rescue therapy are likely to require emergency colectomy



### Follow up

- Commence bone protection and PPI for those on long term steroids
- Remember that many of these patients are young, and may require psychological support. There are organisations such as Crohns and Colitis UK ([www.crohnsandcolitis.org.uk](http://www.crohnsandcolitis.org.uk)) which can provide information and support to sufferers

#### References:

Mowat C, Cole A, Windsor A, et al. Guidelines for the management of inflammatory bowel disease in adults. Gut. 2011 May;60(5):571-607.

National Institute for Health and Care Excellence. NICE guideline [CG118] Colonoscopic surveillance for prevention of colorectal cancer in people with ulcerative colitis, crohn's disease or adenomas. [Online]. Available from: <http://www.nice.org.uk/guidance/cg118> [Accessed 15 June 2015].



# ACUTELY DERANGED LFT'S

*Mr Jacobs is a 54 year old gentleman who presents with jaundice.*

## What you need to find out

- ▶ Medication  
Recent antibiotics, over the counter remedies, intentional or unintentional overdose
- ▶ Travel
- ▶ Intravenous or recreational drug use
- ▶ Alcohol  
Quantity, type, drinking pattern
- ▶ Sexual history
- ▶ Blood transfusions prior to 1990
- ▶ Associated symptoms  
Fever, rigors, vomiting, pale stools, dark urine, pruritis, weight loss, abdominal pain

## What you need to assess

- ▶ Signs of underlying chronic liver disease
- ▶ Evidence of sepsis
- ▶ Signs of acute liver failure  
Coagulopathy, encephalopathy, jaundice

## What you need to do

- ▶ Routine bloods including coagulation and glucose
- ▶ Send a full non invasive liver screen
- ▶ Send ABG and consider arterial ammonia  
Contact your lab before sending. The sample will need to be sent on ice.
- ▶ Be vigilant for signs of sepsis.  
Send blood cultures and have a low threshold for broad spectrum antibiotics, especially if there is evidence of evolving acute liver failure
- ▶ Have a low threshold for starting N-acetylcysteine  
Commence NAC if any suspicion of paracetamol overdose
- ▶ Request US abdomen  
Liver echotexture, focal liver lesion, biliary obstruction, gallstones, portal vein patency
- ▶ If obstructive jaundice is suspected progress to MRCP or ERCP  
ERCP is an invasive procedure. The patient will need to be fasted, and anticoagulants stopped. Check FBC and clotting screen the day before the procedure

## West Haven grading of encephalopathy

1. Minimal lack of awareness, shortened attention span, impaired performance of addition
2. Lethargy/apathy, minimal disorientation of time and place, inappropriate behavior, possible asterixis
3. Somnolence, confusion, gross disorientation
4. Coma

Encephalopathy suggests the patient is developing acute liver failure – call ITU early



## Non Invasive Liver Screen

### Viral serology

- o Hepatitis B sAg, hepatitis C antibody, hepatitis A IgM, herpes simplex virus, CMV, HIV
- o If hepatitis B virus serology is positive, send hepatitis D IgM

### Immunology

- o Anti-mitochondrial antibodies, anti-smooth muscle antibodies, anti-nuclear antibodies
- o Serum immunoglobulins

### Metabolic and genetic

- o Caeruloplasmin, serum free copper levels
- o Serum ferritin, transferrin saturation
- o A1 antitrypsin phenotype

### Paracetamol and salicylate levels

### Alpha fetoprotein – hepatocellular carcinoma

## Alcoholic Hepatitis

Jaundice and coagulopathy in patients with a history of excess alcohol use. Represents acute inflammation of the liver, often on a background of alcoholic steatosis. May contribute to the development of cirrhosis.

Patients should be strongly counselled about the risks of continued drinking and complete abstinence advised.

### STOPAH Trial

Data from the STOPAH trial showed no mortality benefit for pentoxifylline in the treatment of alcoholic hepatitis. For prednisolone there remains uncertainty about its use as there appears to be some improvement in 28 day mortality although there is a much greater risk of infection.

Acute liver failure is defined by evidence of a coagulopathy (INR>1.5) and any degree of encephalopathy in a patient with no evidence of pre-existing cirrhosis developing over a period of less than 6 months. It can be further categorized according to the time between the development of jaundice and encephalopathy:

- Hyper acute – less than one week
- Acute – 8-28 days
- Subacute – 4-12 weeks

### Glasgow Alcoholic Hepatitis Score

Age <50 >50	1 2
WBCx10 <sup>9</sup> /l <15 >15	1 2
Urea mmol/l <5 >5	1 2
INR <1.5 1.5-2 >2	1 2 3
Bilirubin <125 125-250 >250	1 2 3

A score greater than 9 indicates the highest risk of mortality

### Maddreys discriminant function

= 4.6 x (patient's PT – control PT) + total bilirubin mg/dl

A score greater than 32 indicates a poor prognosis, and suggests the patient may benefit from steroid

## Paracetamol Induced Liver Failure

Paracetamol overdose is one of the most common causes of acute liver failure and may require transplantation.

Treat with NAC in significant overdoses (greater than 150mg/kg ingested), staggered overdose, or if 4 hour paracetamol levels are above the treatment line. If in doubt – treat!

Involve a senior and discuss with ITU early. Patients may require discussion with a liver transplantation unit.

The BNF is a useful reference guide, and contains the 'normogram' for treatment of paracetamol overdose. In mixed overdoses, Toxbase gives practical advice regarding treatment and monitoring.

### King's College Criteria for Liver failure

Used to identify patients with poor prognosis in liver failure, and those who may benefit from early liver transplantation.

#### Non-paracetamol:

- INR >6.5
- Three of the following:
  - Age <11 or >40
  - Bilirubin >300umol/l
  - Time from jaundice to development of encephalopathy >7 days
  - INR >3.5
  - Drug toxicity

#### Paracetamol-induced liver failure:

- pH <7.3 on ABG
- All three of:
  - INR >6.5
  - Creatinine >300umol/l
  - Encephalopathy grade 3-4

#### References:

Polson J, Lee WM. AASLD position paper: the management of acute liver failure. *Hepatology*. 2005 May;41(5):1179-1197.

National Institute for Health and Clinical Excellence. NICE guideline [CG100] Alcohol-use disorders: diagnosis and clinical management of alcohol-related physical complications. [Online]. Available from: <http://www.nice.org.uk/guidance/cg100> [Accessed 15 June 2015].

British Society of Gastroenterology. BSG guidelines – Management of abnormal LFT in asymptomatic patients. [Online]. Available from: [http://www.bsg.org.uk/pdf\\_word\\_docs/ablft\\_draft05.doc](http://www.bsg.org.uk/pdf_word_docs/ablft_draft05.doc) [Accessed 15 June 2015].

Thursz MR, Richardson P, Allison M, et al. Prednisolone or pentoxifylline for alcoholic hepatitis. *New Engl J Med*. 2015 Apr 23;372(17):1619-1628.



# ALCOHOL WITHDRAWAL

*Mr White is 43 year old gentleman on the ward. The nursing staff ask you to see him because he has become very agitated, tremulous and verbally aggressive.*

## What you need to find out

- ▶ Alcohol history
- ▶ Previous seizures or delirium tremens
- ▶ Previous detoxification
- ▶ Known cirrhosis

## What you need to assess

- ▶ Nutritional status
- ▶ Signs of acute withdrawal  
Nausea, tremor, sweating, anxiety, hallucinations, agitation
- ▶ Signs of Wernicke's encephalopathy or Korsacoff's syndrome

## What you need to do

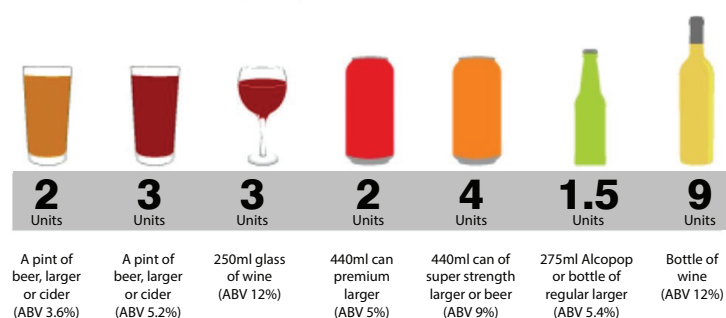
- ▶ Routine bloods
- ▶ Check glucose!  
Patients with chronic alcohol intake can become hypoglycaemic when they stop drinking and may not have hypoaawareness
- ▶ IV Pabrinex (I+II pairs) for 5 days  
It is important to give Pabrinex prior to replacing glucose to avoid precipitating encephalopathy. Switch to oral thiamine and vitamin B co-strong after 5 days
- ▶ Commence benzodiazepine withdrawal regime according to local policy  
Chlordiazepoxide is the preferred choice
- ▶ Consider other causes for confusion  
Always consider sepsis and have a low threshold for starting antibiotics
- ▶ Fast acting benzodiazepines such as lorazepam are first line agents for treating alcohol withdrawal seizures
- ▶ Offer brief intervention and advise abstinence

## Who to call

- Alcohol specialist nurse – can liaise with community services to provide support at discharge and planned alcohol withdrawal
- Dietician – these patients are often malnourished and may need enteral supplementation

## Follow up

- Continue long term vitamin B co strong and thiamine
- Consider commencing anti-craving medication
- Liaise with community alcohol services for further support at discharge



## References:

National Institute for Health and Clinical Excellence. NICE guideline [CG100] Alcohol-use disorders: diagnosis and clinical management of alcohol-related physical complications. [Online]. Available from: <http://www.nice.org.uk/guidance/cg100> [Accessed 15 June 2015].

12 National Institute for Health and Clinical Excellence. NICE guideline [CG115] Alcohol-use disorders: diagnosis, assessment and management of harmful drinking and alcohol dependence. [Online]. Available from: <http://www.nice.org.uk/guidance/cg115> [Accessed 15 June 2015].

# DECOMPENSATED CHRONIC LIVER DISEASE

*Mrs Grey is 58 year old lady with known alcohol-related cirrhosis. She complains of abdominal swelling and her daughter says she is more confused than normal.*

## What you need to find out

- ▶ Is there evidence of decompensation?  
**Ascites, jaundice, variceal bleeding, hepatic encephalopathy, coagulopathy**
- ▶ What could have caused the decompensation?  
Infection, GI bleeding, constipation, hepatocellular carcinoma
- ▶ Is she still actively drinking?
- ▶ Have there been any recent changes to her medication?

## What you need to assess

- ▶ Nutritional status
- ▶ Evidence of ascites
- ▶ Volume status
- ▶ Signs of focal infection
- ▶ Grading of encephalopathy
- ▶ Evidence of bleeding including rectal examination

If falling consciousness level, contact ITU – may require intubation

## What you need to do

- ▶ Routine bloods – FBC, U&E, LFT, CRP, glucose, clotting screen
- ▶ Septic screen, including ascitic tap  
Call microbiology to obtain a quick cell count. A neutrophil count of  $>250/\text{mm}^3$  suggests the presence of spontaneous bacterial peritonitis. Start antibiotics as per local policy. Send the sample in a blood culture bottle for culture.
- ▶ Arterial ammonia level  
Call your lab before sending this – the sample needs to be sent on ice
- ▶ AFP – tumour marker for hepatocellular carcinoma  
Pre-existing cirrhosis is a risk factor for development of HCC
- ▶ Send a full liver screen if there is doubt about the aetiology of cirrhosis
- ▶ Early ultrasound  
Liver texture, focal lesions, portal vein patency, evidence of ascites



Paracetamol can be given for pain, but be cautious with opiates – reduced hepatic metabolism means they can accumulate

## Who to call

- Intensive care – renal failure is a poor prognostic indicator. Need to establish escalation plan in encephalopathy
- Dietician – patients are likely to be malnourished and may require enteral supplementation
- Alcohol liaison nurse
- Pharmacist – to advise on dosing in liver and renal impairment

See BSG-BASL care bundle for managing patients with decompensated cirrhosis during the first 24 hours of admission:

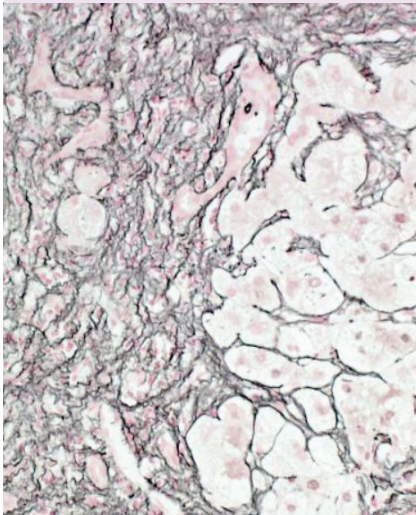
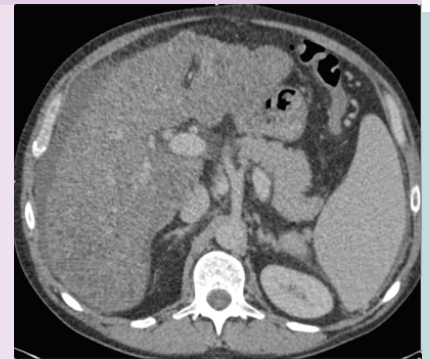
[www.bsg.org.uk/care-bundles/care-bundles-general/index.html](http://www.bsg.org.uk/care-bundles/care-bundles-general/index.html)

## Ascites

- Ascites is considered to be uncomplicated if it is not infected and not associated with renal impairment
- Recommend a no-added salt diet
- In patients with moderate ascites, normal electrolytes and normal renal function, spironolactone 100mg OD is the first line treatment
- Monitor daily weights to measure fluid losses
- Furosemide can be added, and diuretics up-titrated, if spironolactone alone is inadequate
- In patients with diuretic-refractory or tense ascites, consider paracentesis
- TIPS may be an option for patients requiring frequent paracentesis

## Hyponatraemia

- If sodium is 126-135mmol/l and creatinine normal, continue diuretics and observe. Don't fluid-restrict
- If there is evidence of renal impairment, give volume expansion
- Avoid increasing serum sodium by >12mmol/l in 24 hours to avoid cerebral complications



## Renal impairment

- Not all renal impairment in cirrhosis is hepatorenal syndrome! Ensure that the patient is fluid-replete and consider catheterization for careful fluid balance monitoring
- Avoid using N. Saline as this can worsen ascites and oedema
- Stop any nephrotoxic agents e.g. diuretics, NSAIDs
- If still oliguric despite filling, commence terlipressin 1mg IV QDS (be cautious if history of cardiac ischaemia) and Human Albumin Solution 4.5% 500ml BD or 20% 100 ml BD according to local protocol
- Renal impairment in cirrhosis has a poor prognosis. Speak to a senior.

## Encephalopathy

- Give regular lactulose and phosphate enemas aiming for at least three soft bowel motions a day. Start a stool chart
- Have a low threshold for prophylactic broad spectrum antibiotics
- Avoid sedatives
- There are treatment options for chronic encephalopathy – rifaximin, neomycin, LOLA



### References:

Moore KP, Aithal GP. Guidelines on the management of ascites in cirrhosis. Gut. 2006 Oct;55 Suppl 6:vi 1-12

The Grey Book. Management of decompensated liver disease (2012). [Online]. Available from:

<http://www.greybook.sgul.ac.uk/archive/current-guidance/decompensated-liver-disease> [Accessed 15 June 2015].



# NUTRITION

## Enteral feeding

Enteral feeding is used for patients who have a functioning gut, but may require supplementary feeding either because of an inability to maintain adequate intake, or because of a swallowing problem.

Consider starting enteral feeding if a patient's oral intake is likely to be absent for more than 5 days.

Involve dieticians early if you think enteral feeding will be required.

Be aware of the possibility of aspiration pneumonia in patients on enteral feeding. Ensure patients are sat up to 30 degrees to reduce the risk of aspiration.

Nasogastric tube	
<b>Indications</b>	Unconscious patient Swallowing disorder Anorexia Oesophageal stricture Increased nutritional requirements
<b>Contraindications</b>	Avoid insertion for 3 days after acute variceal bleed Midface trauma Recent nasal surgery
<b>Additional considerations</b>	Need to be changed every 4-6 weeks and swapped to the other nostril

Nasojejunal tube	
<b>Indications</b>	Post oesophageal or gastric surgery Gastric reflux Delayed gastric emptying or gastric outlet obstruction Patients who can't sit up
<b>Contraindications</b>	As for NG tube
<b>Additional considerations</b>	Feeding needs to be delivered more slowly than for NG feeding

Percutaenous Endoscopic Gastrostomy (PEG)	
<b>Indications</b>	Enteral feeding required for more than 4-6 weeks Neurological swallowing disorders Mechanical obstruction to swallowing Long term partial failure of intestinal function
<b>Contraindications</b>	Uncorrected coagulopathy Severe ascites Intra-abdominal perforation and sepsis
<b>Additional considerations</b>	Must be reviewed by a consultant gastroenterologist prior to insertion Check site daily for signs of infection or gastric leakage Feeding can be commenced 4 hours post insertion if no evidence of complications

## Parenteral feeding

Parenteral nutrition may be required in patients who require bowel rest, or who have a non-functioning or short gut.

Total Parenteral Nutrition (TPN)	
<b>Indications</b>	Inadequate or unsafe oral intake in patients with a non-functioning or perforated GI tract
<b>Contraindications</b>	Functioning GI tract Treatment anticipated for less than 5 days Inability to obtain venous access Overall prognosis does not warrant aggressive nutritional support
<b>Additional considerations</b>	Must be given through a central line e.g. CVC or PICC Tunneled subclavian line is preferred for long term delivery of TPN

## Nutrition in specific circumstances

### Cirrhosis

Patients with cirrhosis are often malnourished even though their BMI is normal or raised. This is often due to excess fluid or ascites.

### Inflammatory bowel disease

For active small bowel disease a polymeric (liquid) enteral diet can be used to help induce disease remission. A low FODMAP may be used for IBS (Irritable Bowel Syndrome) type symptoms in these patients.

FODMAP is a term for a group of carbohydrates that are felt to contribute to IBS type symptoms

### Dementia

We strongly recommend that any decisions regarding nutritional support for patients with dementia are made by a senior member of the team as this is often a very emotive area.

## Refeeding Syndrome

Patients at high risk of refeeding syndrome include:

- BMI <16
- Unintentional weight loss >10% within last 3-6 months
- Little or no nutritional intake for 5-10 days
- Low levels of potassium, phosphate or magnesium prior to feeding
- History of alcohol abuse
- Use of drugs such as insulin, chemotherapy, antacids, diuretics

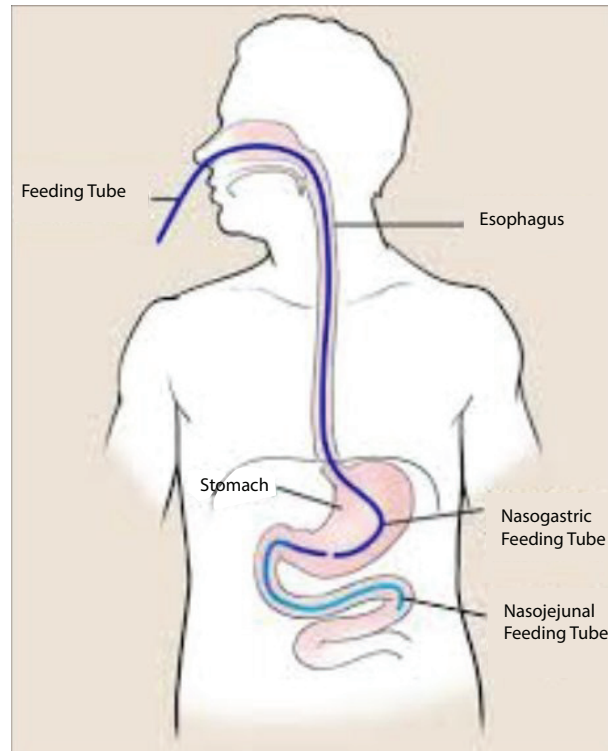
In order to avoid this feed is commenced slowly and built up over the first 4-7 days. Correct potassium, magnesium and phosphate but do not delay feeding to do this. Oral thiamine and vitamin B compound strong, or IV pabrinex are given before and for the first 10 days of feeding. Monitoring of re-feeding bloods as indicated in the table and correction of potassium, phosphate and magnesium as required.

Laboratory monitoring of nutritional support

Parameter	Frequency	Interpretation
<b>Sodium, potassium, urea creatinine</b>	Baseline Daily until stable Then 1-2 times weekly	Interpret in context of fluid balance and medication.
<b>Magnesium, phosphate</b>	Baseline Daily if risk of re-feeding syndrome Three times a week until stable Then weekly	Low concentration indicates poor status Supplement IV in refeeding syndrome
<b>Glucose</b>	Baseline At least 1-2 times daily until stable Then weekly	Glucose intolerance is common and good glycaemic control is necessary
<b>LFT, FBC</b>	Baseline 1-2 times weekly until stable Then weekly	
<b>Calcium, albumin</b>	Baseline Then weekly	Hypocalcaemia may be secondary to magnesium deficiency Low albumin reflects disease status not protein status.

## Electrolyte replacement

We recommend that you consult your local hospital policy regarding how and when to supplement electrolytes such as magnesium, potassium and phosphate. You could also speak to a senior member of your team or a dietician.



### References:

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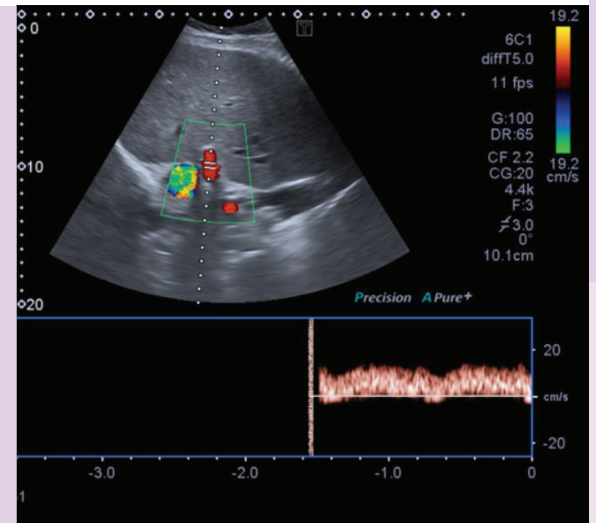
# INVESTIGATIONS IN GASTROENTEROLOGY

You will probably be familiar with many of the imaging modalities and procedures described, and should not be expected to consent patients for endoscopic procedures. However, a working knowledge of the benefits and limitations of each modality should help you to choose the most suitable test to give you the information you need, and will make conversations with Radiologists a little easier!

## Radiology

### Ultrasound

- First line imaging modality in suspected biliary and hepatological disorders
- Surveillance for development of hepatocellular carcinoma in established cirrhosis (6 monthly US with serum alpha-fetoprotein levels)
- Used to guide paracentesis in complex cases or for biopsy of a focal lesion
- Remember to ask for Doppler imaging for patency of hepatic vessels

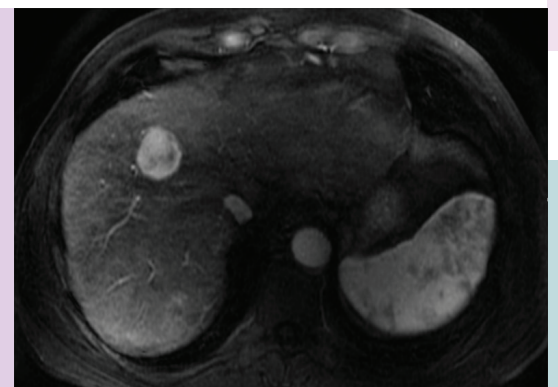


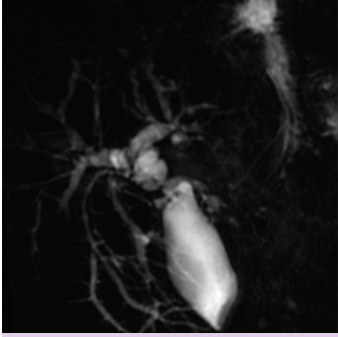
### Fibroscan

- Commonly used as a non-invasive measure of liver stiffness which can obviate the need for liver biopsy
- Results are given as a numerical score indicating the degree of fibrosis – a score of more than 14kPa indicates cirrhosis

### Computerised tomography (CT)

- Axial imaging is invaluable in the assessment of staging of malignancies, evidence of cirrhotic decompensation and complications of inflammatory bowel disease, amongst others.
- Be aware that most patients will require contrast and renal protection with IV fluids or sodium bicarbonate +/- N-acetylcysteine is advisable. Look up your local renal protection policy.
- Risk factors for contrast induced AKI include CKD (eGFR < 60); age >75; cardiac failure; nephrotoxic medication (aminoglycosides, NSAIDs, amphotericin B); hypovolaemia; sepsis; inter-arterial administration of contrast; volume (dose) of contrast.





## Magnetic resonance cholangio-pancreatography

- Non-invasive MRI imaging of the biliary tree can demonstrate biliary obstruction in gallstone disease, and monitor the extent of stricturing in disorders such as primary sclerosing cholangitis (PSC)
- If a lesion or dominant stricture is identified, ERCP is usually the next step to allow stenting and to obtain cytology

## Small bowel magnetic resonance imaging (MRI)

- This is a useful imaging modality to evaluate small bowel disease in Crohn's, without exposing the patient to ionizing radiation
- Ultrasound can also identify small bowel oedema, but requires a high skill level on the part of the Radiologist, so is not available at all hospitals



## Liver biopsy

- Usually performed under ultrasound or CT guidance
- May be performed via transjugular route if the patient has a significant clotting abnormality
- Contraindications to liver biopsy include an uncooperative patient, extrahepatic biliary obstruction, bacterial cholangitis, INR > 1.4, PT 4-6 seconds prolonged, platelet count < 60, tense ascites, cystic liver lesions, amyloidosis
- Aspirin should be discontinued at least 2 days prior to biopsy and clopidogrel discontinued for at least 7 days
- Be vigilant for evidence of bleeding following procedure particularly within the first 6 hours. Bleeding causes stretching of the liver capsule leading to pain. Patients may require urgent CT imaging to quantify the bleed if evidence of significant pain or haemodynamic instability

## Endoscopy

Oesophagogastroduodenoscopy (OGD)	
<b>Indications</b>	Upper GI bleeding, iron deficiency anaemia, dysphagia, persistent vomiting, dyspepsia, coeliac disease diagnosis, surveillance in Barrett's oesophagus and varices
<b>Interventions</b>	Biopsy, adrenaline injection for ulcers, variceal banding or glue injection, stenting of oesophageal strictures, argon plasma coagulation (APC)
<b>Contraindications</b>	Medically unstable patients. Caution in pharyngeal pouch
<b>Complications</b>	Bleeding, rarely perforation (mortality 0.001%) Sedation related complications, damage to oropharynx, throat and abdominal discomfort

<b>Colonoscopy</b>	
<b>Indications</b>	Change in bowel habit, lower GI bleeding, iron deficiency anaemia, IBD assessment of extent and activity, colorectal cancer surveillance, chronic diarrhoea
<b>Interventions</b>	Biopsy, polypectomy, tattooing of lesions, stenting of colonic strictures. Skilled endoscopists can remove surface lesions
<b>Contraindications</b>	Toxic megacolon, fulminant colitis, known colonic perforation. Higher risk procedure in pregnancy
<b>Complications</b>	Bleeding (0.001–0.24%), rarely perforation (0–0.19%), splenic rupture

<b>Flexible sigmoidoscopy</b>	
<b>Indications</b>	Investigation of acute diarrhoea and rectal bleeding
<b>Interventions</b>	Biopsy, rectal stenting
<b>Contraindications</b>	Known colonic perforation, acute diverticulitis
<b>Complications</b>	Bleeding, infection, rarely perforation

<b>Endoscopic retrograde cholangio-pancreatography (ERCP)</b>	
<b>Indications</b>	Relief of biliary obstruction, diagnosis of pancreatic and biliary malignancy, palliative therapy for inoperable pancreaticobiliary malignancies
<b>Interventions</b>	Sphincterotomy, stenting, trawling of ducts, biopsy and scraping for cytology
<b>Contraindications</b>	Uncomplicated acute pancreatitis, suspected perforation Altered biliary anatomy (e.g. previous biliary surgery) may make the procedure difficult
<b>Complications</b>	Pancreatitis (3–10%), aspiration pneumonia, bleeding (incidence of a significant bleed is 2%), cholangitis (<0.5%), perforation (0.5–5.2%). Most centers will give prophylactic antibiotics peri-procedure. Check your local policy.

<b>Endoscopic ultrasound (EUS)</b>	
<b>Indications</b>	Staging and diagnosis of cancer, evaluating chronic pancreatitis, studying bile duct abnormalities
<b>Interventions</b>	Fine needle aspiration of structures outside the gut lumen e.g. pancreas, cysts, mediastinal lymph nodes
<b>Complications</b>	Bleeding, infection, rarely perforation, pancreatitis Antibiotic prophylaxis may be require for sampling of cystic lesions

<b>Capsule endoscopy</b>	
<b>Indications</b>	Obscure GI bleeding, anaemia, small bowel Crohns disease, assessment of coeliac disease
<b>Contraindications</b>	Known GI strictures, swallowing disorders
<b>Complications</b>	Rarely, the capsule can be retained leading to gastrointestinal obstruction. This may require surgical removal.

## Pre-procedure anticoagulation

For low-risk endoscopic procedures not involving intervention such as diagnostic procedures +/- biopsy; biliary or pancreatic stenting; diagnostic EUS, warfarin and clopidogrel can be continued unless INR > 5.

For high-risk endoscopic procedures involving intervention such as polypectomy; ERCP with sphincterotomy; endoscopic mucosal resection; dilation of strictures; therapy of varices; PEG; EUS with FNA:

- o Stop warfarin 5 days before endoscopy. Check INR to ensure <1.5
- o For patients with high-risk conditions requiring anticoagulation, such as metal heart valves, use therapeutic low molecular weight heparin (LMWH) for cover during this period. Start 2 days after stopping warfarin. Omit LMWH on the day of the procedure.
- o Recommence LMWH and warfarin the day after procedure. Continue LMWH until therapeutic INR achieved.
- o Stop clopidogrel 7 days prior to the procedure.
- o Therapeutic endoscopic procedures can be safely performed on aspirin.

## Advice for NOAC's

<b>Low-risk procedure</b> E.g.: Diagnostic endoscopy +/- biopsy, stenting	eGFR>50	Stop 24h pre-procedure	Restart 6-8h post-procedure
	eGFR 30-50	Stop 48h pre-procedure	
	eGFR <30	Stop 72h pre-procedure	
<b>High risk procedure</b> E.g.: Variceal banding, PEG insertion, polypectomy, ERCP with sphincterotomy	eGFR>50	Stop 24-48h pre-procedure	Restart 48h post-procedure In patients at high risk of thrombosis, consider treatment dose clexane as bridge to restarting
	eGFR 30-50	Stop 4 days pre-procedure	
	eGFR <30	Stop 5 days pre-procedure	Do not restart post-procedure Discuss with specialist team regarding alternative antioagulation

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Sidhu R, Sanders DS, Morris AJ, McAlindon ME. Guidelines on small bowel enteroscopy and capsule endoscopy in adults. Gut. 2008 Jan;57(1):125-136.

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The Renal Association. Prevention of contrast induced acute kidney injury (CI-AKI) in adult patients. [Online]. Available from: [http://www.renal.org/docs/default-source/guidelines-resources/joint-guidelines/Prevention\\_of\\_Contrast\\_Induced\\_Acute\\_Kidney\\_Injury\\_CI-AKI\\_In\\_Adult\\_Patients.pdf](http://www.renal.org/docs/default-source/guidelines-resources/joint-guidelines/Prevention_of_Contrast_Induced_Acute_Kidney_Injury_CI-AKI_In_Adult_Patients.pdf) [Accessed 15 June 2015].

British Society of Gastroenterology. BSG guidelines – Complications of gastrointestinal endoscopy. [Online]. Available from: <http://www.bsg.org.uk/images/stories/docs/clinical/guidelines/endoscopy/complications.pdf> [Accessed 15 June 2015].

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# PROCEDURES IN GASTROENTEROLOGY

As a junior Doctor on a gastroenterology ward the most likely procedures that you will be performing are ascitic tap, paracentesis and placement of nasogastric tube. As with all procedures you are expected to gain informed consent, prepare the appropriate equipment and adhere to appropriate infection control measures.

## Consent

Verbal consent is usually sufficient for these procedures although written consent is advisable for ascitic drains or if the patient lacks capacity. Ensure the patient has a good understanding of the reasons for performing the procedure, and of the possible complications. Make sure you document that you have gained consent in the medical notes.

## Training

Ensure you've been adequately supervised prior to performing any of these procedures. Never perform a procedure if you feel uncomfortable. It is often a good opportunity to get an assessment done with a senior member of the team.

## Preparation

Gather all the equipment you need prior to starting. We've listed the equipment you'll need for each procedure, but you may find differences in availability between the hospitals you work in.

Take time to ensure the patient is in the best position and that you've got an appropriate working space. A trolley is often the best surface for your equipment.

## Sterile technique

Always wash your hands well with soap and water prior to starting a procedure. Make sure you have the appropriate protective equipment for yourself. Keep a good sterile field and discard any equipment that is decontaminated.

# Ascitic tap

## Indications

- Clinical suspicion of SBP (preferably prior to antibiotics)
- New onset ascites
- Patients with cirrhosis and ascites on hospital admission

Coagulopathy is not considered to be a contraindication. For patients with an INR >2.0 or platelets less than 50 it would be worth speaking with a senior first.

## Complications

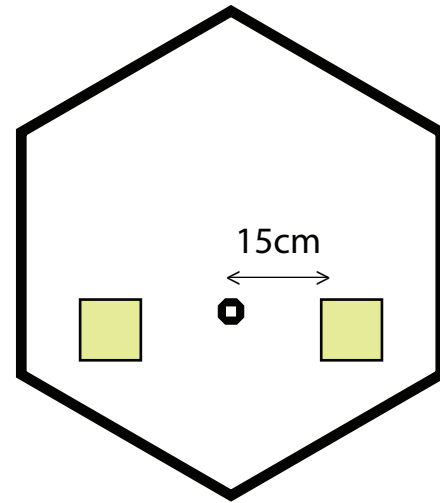
- Bleeding (rarely a serious or life threatening complication)
- Infection
- Bowel perforation (less than 1 in 1000 procedures)

## Equipment needed:

Sterile dressing pack  
 Sterile gloves  
 Chloroprep  
 Green needle  
 20 ml syringe  
 Gauze  
 Simple dressing  
 Sample containers and blood culture bottles  
 Request forms (microbiology and biochemistry)

<b>Step 1</b>	Obtain verbal consent.
<b>Step 2</b>	Gather equipment.
<b>Step 3</b>	Lay patient flat on the bed with abdomen exposed.
<b>Step 4</b>	Identify appropriate position for obtaining sample. Usually 15cm lateral to umbilicus in left or right lower quadrant. Take care to avoid enlarged liver or spleen.
<b>Step 5</b>	Prepare sterile field, wash hands and put on sterile gloves.
<b>Step 6</b>	Clean the area in a circular motion and allow to dry.
<b>Step 7</b>	Use a green needle and a 20 ml syringe to obtain the sample. Make sure you are withdrawing on the syringe as you advance the needle and stop when you reach the fluid. 10-20 mls of ascitic fluid is usually satisfactory for diagnostic purposes.
<b>Step 8</b>	Apply a simple dressing over the area once you have finished.
<b>Step 9</b>	Inoculate the fluid into the blood culture bottles and other sample containers immediately and discard needle into sharps bin.
<b>Step 10</b>	Ensure patient is comfortable post procedure. Document in patient's notes

An ascitic neutrophil count of >250 cells/mm<sup>3</sup> is diagnostic of SBP in the absence of a perforated viscus or inflammation of intra-abdominal organs.



Serum Ascites - Albumin Gradient	
SA-AG $\geq$ 11g/l	SA-AG < 11 g/l
Cirrhosis Cardiac failure Nephrotic syndrome	Malignancy Pancreatitis Tuberculosis

Test	Container	Indication
<b>WCC, differential and culture</b>	Blood culture bottles	To exclude or confirm SBP
<b>Protein count (serum ascites -albumin gradient)</b>	Universal container	To determine cause of ascites
<b>Amylase</b>	Universal container	Clinical suspicion of pancreatic disease
<b>Cytology</b>	Universal container	Clinical suspicion of underlying malignancy
<b>Mycobacteria</b>	Blood culture bottles	Clinical suspicion of Tuberculosis

**References:**

# Paracentesis

## Indications

- Tense or symptomatic ascites

## Contraindications

- Uncooperative patient
- Severe bowel distention or bowel obstruction
- Infected skin or soft tissue at intended site of puncture
- Pregnancy

## Complications

- Bleeding (rarely a serious or life threatening complication)
- Infection
- Bowel perforation (less than 1 in 1000 procedures)

Use an absorbent pad under the patient such as an inco-pad

## Equipment needed:

Sterile dressing pack  
Sterile gloves  
Chloroprep  
Absorbent pad  
Green needle, blue needle and needle for drawing up anaesthetic  
Local anaesthetic (10 mls 1% or 2% lidocaine)  
10 ml syringe  
Drain kit (Seldinger™ chest drain kit or Bonano™ catheter kit)  
Gauze  
4 x Tegaderm dressings  
Urine collection bag and stand  
Human albumin solution

Discuss with senior about patients with renal failure, encephalopathy or SBP.

Coagulopathy is not considered to be a contraindication. For patients with an INR >2.0 or platelets less than 50 it would be worth speaking with a senior first.

<b>Step 1</b>	Obtain written consent. Ensure patient has IV access and advise patient to empty their bladder.
<b>Step 2</b>	Gather equipment.
<b>Step 3</b>	Lay patient flat on bed with abdomen exposed.
<b>Step 4</b>	Identify appropriate position for obtaining sample. Usually 15cm lateral to umbilicus in left or right lower quadrant. Take care to avoid enlarged liver or spleen.
<b>Step 5</b>	Prepare sterile field, wash hands and put on sterile gloves.
<b>Step 6</b>	Clean the area and allow to dry
<b>Step 7</b>	Use a blue needle to inject local anaesthetic under the skin to create a bleb. Continue injecting local anaesthetic in the direction that you will insert the drain. Always withdraw slightly prior to injection. Change to a green needle and continue until ascitic fluid is aspirated. Make a note of how far in this was.
<b>Step 8</b>	The most common types of drain are Seldinger™ or Bonano™. Insert drain according to the equipment used on your ward.
<b>Step 9</b>	Attach drain to a urine collection bag.
<b>Step 10</b>	Select an appropriate dressing to secure the drain in place. Often 4 interlocking Tegaderm dressings work well.
<b>Step 11</b>	Give volume expansion according to local policy.
<b>Step 12</b>	Remove the drain after 6 hours.
<b>Step 13</b>	Ensure patient is comfortable post procedure. Document in notes.



## Seldinger™ technique

This is the same technique as you will use for chest drains and central lines.

Use the large bore needle attached to a syringe.

Insert into the abdomen just as you did when putting in the local anaesthetic. Make sure you are withdrawing on the back of the syringe as you do.

Once ascitic fluid is reached make sure you can aspirate easily.

At this point hold the needle firmly in place and remove the syringe from the back.

Insert the guidewire through the back of the needle then remove the needle from over the guidewire. Make sure you always have hold of the end of the guidewire.

Use the scalpel to make a small nick in the skin adjacent to the guidewire as it enters the abdomen. Ensure the blade is facing away from the wire.

Insert the dilator over the guidewire and into the abdominal wall. You may have to twist the dilator as you do this. Insert the drain over the guidewire up to approximately 12cm. You may have to withdraw the guidewire from the abdomen until the end comes out of the drain as you must always have hold of part of the guidewire.

Once the drain is in position you can remove the guidewire completely and attach the drain to the collection bag via a 3 way tap.

Volume expansion using 100 mls 20% Human Albumin Solution for every 3 litres ascites drained should be given once paracentesis is complete (check local policy)

## Bonano™ technique

Advance the sheath to straighten the

catheter and insert needle into the catheter before removing the sheath.

Ensure the clamp is closed.

Apply traction to the skin with one hand and with the other puncture the skin at 90° with the Bonano™ catheter and advance through the abdominal wall until ascitic fluid is obtained.

Then advance the catheter over the needle until the anchor is flush to the skin.

Remove the needle completely.

Attach the collection bag and open the clamp.

Leaks can be managed by asking patient to lie on the opposite side or by inserting a purse string suture around drain site

# Nasogastric Tube Placement

## Indications

- Unconscious patient
- Swallowing disorder
- Physiological anorexia
- Upper GI obstruction (e.g. oesophageal stricture)
- Partial intestinal failure (e.g. post op ileus, IBD, short bowel syndrome)
- Increased nutritional requirements
- Psychological problems (e.g. severe depression, anorexia nervosa)

## Contraindications

- Avoid placement for 3 days after an acute variceal bleed
- Avoid in suspected basal skull fracture

## Complications

- Traumatic complications are uncommon if using fine bore tubes
- Bronchial insertion (especially if swallow impaired or reduced consciousness)
- Perforation of pharyngeal or oesophageal pouch and cranial insertion have been reported
- Perforation of oesophagus, stomach or small bowel is unusual but can occur if guide-wire is reinserted
- Local irritation (e.g. nasal erosions, abscess formation, sinusitis, otitis media)
- Gastro-oesophageal reflux
- Aspiration pneumonia
- Nausea, bloating, abdominal cramps, diarrhoea

### Equipment needed:

Nasogastric tube  
Gel for lubrication  
Drinking water  
Dressing to fix tube to patient

<b>Step 1</b>	Obtain verbal consent.
<b>Step 2</b>	Gather equipment.
<b>Step 3</b>	Mark the distance of the tube from the xiphisternum to the ear lobe and then to the tip of the nose.
<b>Step 4</b>	Lubricate the tube externally with gel and internally with water if there is a guidewire. Check the guidewire moves freely.
<b>Step 5</b>	Decide which nostril to use by asking the patient to inhale through each nostril in turn whilst occluding the other. Choose the clearer one.
<b>Step 6</b>	Sit the patient in an upright position with their head level.
<b>Step 7</b>	Insert the end of the tube into the nostril and slide in along the floor of the nostril until it is visible at the back of the pharynx.
<b>Step 8</b>	If the patient is able to, ask them to take a mouthful of water and swallow as you advance the tube further. Continue this until you reach the mark determined in step 3.
<b>Step 9</b>	Remove the tube if the patient becomes distressed, starts coughing or is cyanosed.
<b>Step 10</b>	Once in place remove the guidewire if present and secure with an appropriate dressing.
<b>Step 11</b>	Confirm the position of the tube according to local policy.
<b>Step 12</b>	Document in patient's notes.

### Checking the position of the tube

Tube aspirate should have a pH <5.5

If aspiration is difficult try changing the patient's position or if safe give them a drink to increase their gastric contents. You could try to advance the tube slightly. If doubt remains then get a CXR.

To confirm gastric position of NG tube on CXR, ask:

1. Does the path of the tube follow the oesophagus and avoid the contours of the bronchi?
2. Does the tube clearly bisect the carina or the bronchi?
3. Does it cross the diaphragm in the midline?
4. Is the tip clearly visible below the left hemi-diaphragm?



Nasogastric Tube in the Wrong Position

The answer must be yes to all of the above. If not discuss with radiology or a senior. If tube is in the lung it should be removed immediately.

Remember that the pH test is of limited use if the patient is taking acid suppression.

#### References:

Stroud M, Duncan H, Nightingale J, British Society of Gastroenterology. Guidelines for enteral feeding in adult hospital patients. Gut. 2003 Dec;52 Suppl 7:vii1-vii12

28 National Patient Safety Agency. Reducing the harm caused by misplaced nasogastric feeding tubes in adults, children and infants. [Online]. Available from: <http://www.nrls.npsa.nhs.uk/resources/type/alerts/?entryid45=129640> [Accessed 15 June 2015].

# USEFUL TREATMENT PROTOCOLS

## H.Pylori eradication

First line treatment is a 7 day twice daily course of:  
PPI plus amoxicillin plus clarithromycin or metronidazole.

If penicillin allergic give PPI plus clarithromycin plus metronidazole.

## Bleeding Peptic Ulcer

For major peptic ulcer bleeding following endoscopic haemostatic therapy high dose IV PPI is recommended (this is sometimes called the Hong Kong regime).

Omeprazole or pantoprazole 80mg IV bolus followed by an infusion of 8mg per hour for 72 hours.

## Terlipressin for bleeding varicies

Contraindicated in vascular disease especially coronary heart disease.

Octreotide can be used as an alternative.

Use cautiously in heart failure, hypertension, asthma, epilepsy, migraine.

2 mg IV every 4-6 hours until bleeding is controlled or for up to 72 hours.

Make sure terlipressin is crossed off drug card after 72 hours

## Alcohol withdrawal

Inpatient detoxification agents include chlordiazepoxide or oxazepam. Either a fixed dose reducing regimen or a symptom triggered flexible regimen is used.

Example fixed dose reducing regimen:

Chlordiazepoxide PO		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
	0800	30 mg	25 mg	15 mg	10 mg	5 mg	5 mg
	1200	30 mg	25 mg	15 mg	10 mg	5 mg	
	1600	30 mg	25 mg	15 mg	10 mg	5 mg	
	2200	30 mg	25 mg	15 mg	10 mg	5 mg	5 mg



## Ciclosporin as rescue therapy for UC

Used as a bridging therapy to

azathioprine for patients with acute severe UC that has failed to respond adequately to steroids by day 3.

Check baseline magnesium,

cholesterol and TPMT levels and ensure TB has been excluded.

Initially start 2 mg/kg/day of

ciclosporin by continuous IV infusion for 7 days.

Daily monitoring of FBC, U&E, LFT and BP.

Check ciclosporin levels at 0, 1 and 2 weeks then monthly (target levels of 100-200 ng/ml).

If patient responds switch to oral ciclosporin 5-8 mg/kg/day as well as commencing azathioprine. Oral prednisolone is gradually tapered to 20 mg over one month and continued. Make sure patient is also on bone protection and PPI.

Oral ciclosporin should be continued for 3-4 months. Once ciclosporin is stopped steroids should be tapered to zero over 4-8 weeks.

Discuss with senior re: PCP prophylaxis.

### References:

Nice Institute for Health and Clinical Excellence. NICE guideline [CG184] Dyspepsia and gastro-oesophageal reflux disease: Investigation and management of dyspepsia, symptoms suggestive of gastro-oesophageal reflux disease, or both. [Online]. Available from: <https://www.nice.org.uk/Guidance/CG184> [Accessed 15 June 2015].

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Nice Institute for Health and Clinical Excellence. NICE guideline [TA163] Infliximab for acute exacerbations of ulcerative colitis. [Online]. Available from: <https://www.nice.org.uk/guidance/ta163> [Accessed 15 June 2015]. Ramond MJ, Poynard T, Rueff, et al. A Randomized Trial of Prednisolone in Patients with Severe Alcoholic Hepatitis. *N Engl J Med.* 1992 Feb 20;326(8):507-512.

Thursz MR, Richardson P, Allison M, et al. Prednisolone or pentoxifylline for alcoholic hepatitis. *New Engl J Med.* 2015 Apr 23;372(17):1619-1628.

Joint Formulary Committee. British National Formulary. [68th] ed. London: BMJ Group and Pharmaceutical Press; [2014].

## Infliximab as rescue therapy for UC

This can be used for patients with acute severely active UC only if ciclosporin is contraindicated or if the patient is taking part in a research study.

Prior to use patients must be screened for active and inactive TB.

The recommended dose is 5mg/kg body weight infused intravenously over 2 hours. Additional infusions of 5mg/kg are given at 2 and 6 weeks post first infusion and then every 8 weeks.

## Steroids for Alcoholic Hepatitis

Prednisolone 40 mg OD for 28 days

## N-Acetylcysteine infusion for Paracetamol Overdose

Treatment with N-acetylcysteine should be given for the following:

- 4 hour plasma paracetamol concentration falls on or above the single treatment line on the paracetamol treatment graph (available in the BNF).
- Patient has taken a staggered overdose (unless it is over 24 hours since last ingestion, the patient is asymptomatic, paracetamol levels are undetectable and LFT/creatinine and INR are all normal).
- Significant ingestion of >75mg/kg in 24 hours.

First infusion - 150mg/kg NAC over 1 hour

Second infusion - 50mg/kg NAC over 4 hours

Third infusion - 100mg/kg NAC over 16 hours

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