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Ministry of Health and Family Welfare, Government of India

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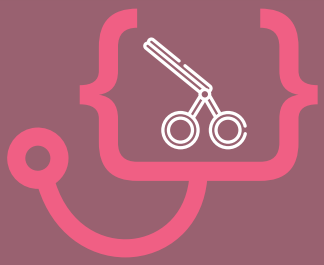

2022 Edition, Vol.III

STANDARD TREATMENT WORKFLOWS

of India

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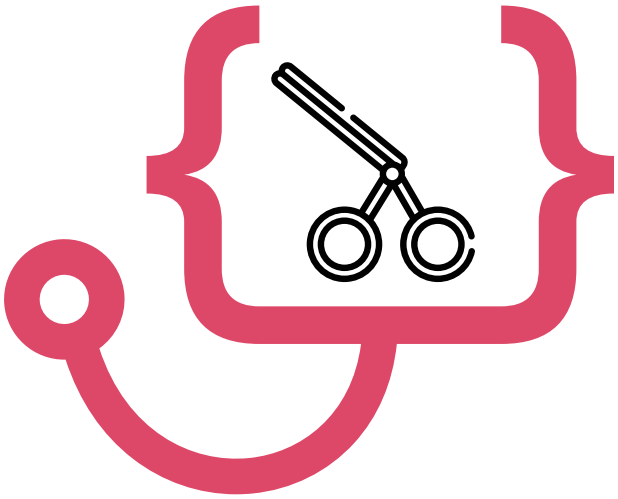

STANDARD TREATMENT WORKFLOWS *of India*

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Ministry of Health and Family Welfare, Government of India

These STWs have been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (**stw.icmr.org.in**) for more information.

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INTRODUCTION

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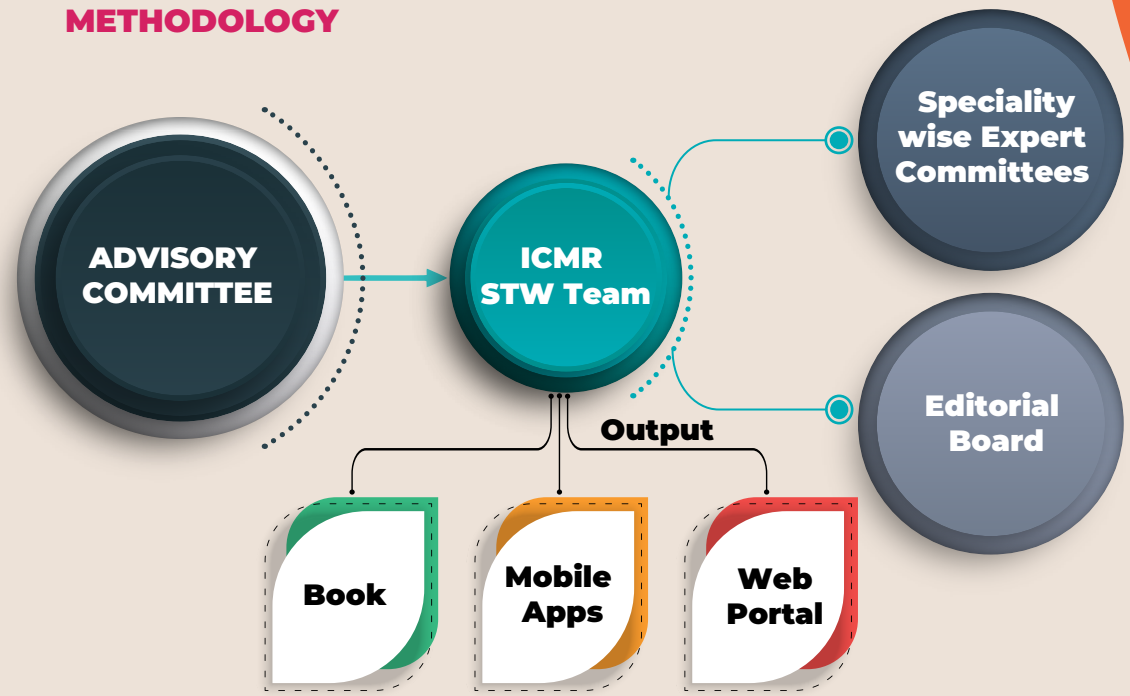
GOAL

To empower the primary, secondary and tertiary health care physicians/surgeons towards achieving the overall goal of Universal Health Coverage with disease management protocols and pre-defined referral mechanisms by decoding complex guidelines.

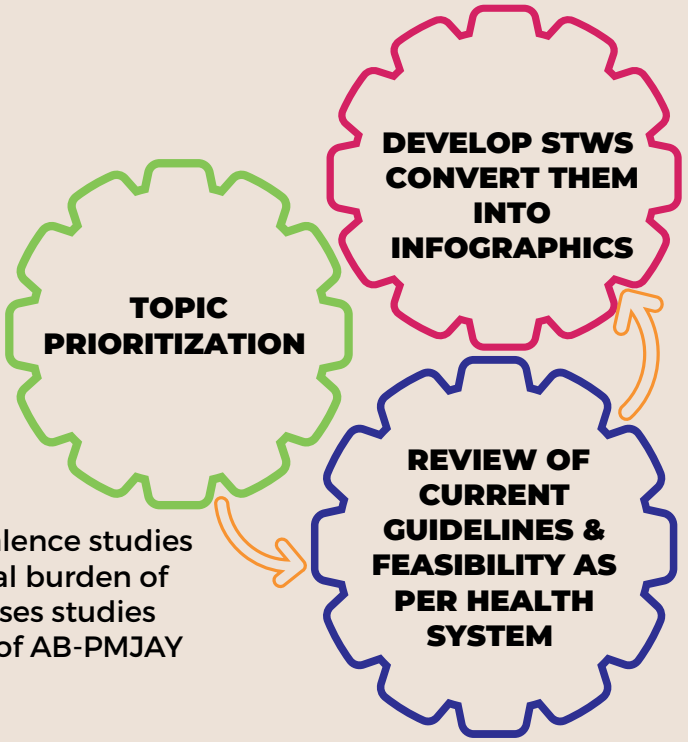
OBJECTIVES

To formulate treatment algorithms for common and serious medical & surgical conditions for both outdoor & indoor patient management at primary, secondary and tertiary levels of India's healthcare system that are scientific, robust and locally contextual.

METHODOLOGY



PROCESS OVERVIEW



- Participation also from Public Health Specialists Search Strategists Graphic Designers

- Prevalence studies
- Global burden of diseases studies
- HBP of AB-PMJAY

- Review by Editorial Board
- Approval by Advisory Committee

GASTROENTEROLOGY

July/ 2020

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Standard Treatment Workflow (STW)

ACUTE GASTROINTESTINAL BLEED IN ADULTS - PART A

ICD-10-K92.2

Diagnose Acute GI Bleed if there is history of

- Vomiting of blood (Hematemesis)
- Bleeding per rectum (Hematochezia) — RED STOOLS
- Black tarry stools (Melena) — BLACK STOOLS
- Blood in nasogastric tube (NG) (Active GI bleed)

ASSESS FOR HIGH RISK
(Classify as high risk if any of these are present)

- Pulse rate >100/min
- Systolic BP <90 mmHg
- H/O Syncope
- Oxygen saturation <90%
- Altered sensorium
- Age >60 years and/ or significant co-morbid conditions

RESUSCITATE

- Place atleast one IV cannula (minimum 18 G) and start crystalloids (Ringer's lactate or normal saline)
- Place a NG tube and perform lavage
- Start supplemental oxygen at 2 L/min in high risk cases and those in shock
- Stop antiplatelets and anticoagulants. If H/o recent myocardial infarction or stent placed, consult a cardiologist
- Refer all high risk cases after initial resuscitation

TARGETS

- Pulse rate <100/ min
- Systolic BP >90 mmHg
- Oxygen saturation >90%
- Hemoglobin >7 g/dL (in case of heart disease >9g/dL)

CLINICAL EVALUATION

Assess for	History and examination	Points towards
Site of bleed	Hematemesis/ blood in NG tube/ melena	Upper GI bleed
	Fresh blood per rectum/ maroon stools	Lower/Upper GI bleed
Etiology	H/o - alcohol intake/ jaundice/ blood transfusion O/E - jaundice/ ascites/ splenomegaly	Variceal bleed
	H/o epigastric pain/ NSAID intake/ antiplatelets	Ulcer bleed
	If lower GI Bleed: H/o fever/ diarrhea	Infective causes (eg: Typhoid)
	H/o bleeding per rectum with concomitant yellow stools	Hemorrhoids/ rectal lesion
Rate of blood loss	Large volume hematemesis/ fresh blood/ frequent melena/ postural giddiness/ breathlessness/ hypotension	Rapid blood loss
Precipitants	Aspirin/ NSAIDs/ antiplatelets/ anticoagulants	Stop all precipitants
Co-morbid conditions	Cardiovascular disease/ renal disease/ malignancy	Assess functional status

INVESTIGATIONS

Hemoglobin, platelets, TLC, PTL, INR

Blood grouping and cross matching to arrange blood

Desirable Tests:
Prothrombin time/ INR, liver function tests, blood urea and creatinine, HBsAg, Anti HCV ultrasound abdomen

MANAGEMENT

Continue resuscitation
(As detailed above)

Blood transfusion
Give packed RBC/ whole blood if Hb <7 g/dL (or Hb <9 g/dL in case pre-existing heart disease)

Patient may need ICU care depending on the overall general condition. If patient is in altered sensorium and bleeding actively secure airway

PHARMACOTHERAPY

Diagnosis	Class of drugs	Administration regimen
All patients	PPIs	Inj. Pantoprazole or Esomeprazole 80 mg I.V. stat, followed by 40 mg 12 hourly; if I.V. not available, give oral Pantoprazole/ Esomeprazole. Stop if variceal bleed is documented
Suspected variceal bleed	Vasoconstrictors	Inj Terlipressin* 2 mg I.V. stat, followed by Terlipressin 1 mg 6 hourly X 3-5 days OR Inj. Somatostatin 250 µg I.V. stat, followed by 250 µg/ hr infusion X 3-5 days OR Inj. Octreotide 50 µg stat I.V. followed by 50 µg/ hr infusion X 3-5 days
		* Avoid Terlipressin in patients with suspected heart disease or peripheral vascular disease. if patient is on Terlipressin examine for signs of peripheral/ cardiac ischemia regularly
	Antibiotics	Inj Ceftriaxone I.V. 1 g 12 hourly x 3-5 days OR Inj Cefotaxime I.V. 1 g 8 hourly X 3-5 days
Lower GI bleed with fever	Antibiotics	Inj Ceftriaxone 2g I.V. 12 hourly AND Inj Metronidazole 500 mg I.V. 8 hourly — X 5 days

**All cases of acute GI Bleed must undergo endoscopy within 24 hours of initial stabilisation.
Patients with active ongoing bleed may require an earlier endoscopy.
Appropriate informed consent to be taken prior to endoscopy.**

REFER TO PART B OF TREATMENT WORKFLOW FOR ENDOSCOPIC THERAPY AND/ OR SURGERY

ABBREVIATIONS

HCV: Hepatitis C virus
INR: International normalized ratio
NG: Nasogastric
NSAID: Nonsteroidal anti-inflammatory drugs
PPIs: Proton pump inhibitors
PTL: Platelet count
RBC: Red blood cell
TLC: Total leukocyte count

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Standard Treatment Workflow (STW)

ACUTE GASTROINTESTINAL BLEED IN ADULTS - PART B

ICD-10-K92.2

INTERVENTIONAL MANAGEMENT

UPPER GI ENDOSCOPY (UGIE)

PORTAL HYPERTENSION (PHT)

ESOPHAGEAL VARICES:
- Variceal band ligation is preferable
- Sclerotherapy if band ligation not feasible/ available

FUNDAL VARICES:
0.5 - 1 mL of Cyanoacrylate glue injection per varix

FURTHER MANAGEMENT
- LFT and viral markers
- USG abdomen
- Try to ascertain the etiology of portal hypertension

Continue vasoactive drugs for total of 5 days in patients with:
- Active bleeding on endoscopy
- Patients who are Child-Pugh class C status
- Received >4 packed red cell transfusions

Recommendations for transfusion:
- Consider in case of active bleeding
- Transfuse platelets if platelet count is <50000/ mm^3

In case of rebleeding:
Try another attempt to control with endotherapy

Failure to control bleeding:
Fully covered large bore esophageal metal stent or TIPS

TREATMENT AT DISCHARGE

Propranolol (20 mg) 12 hourly, increase incrementally to achieve a heart rate of 60/min unless contraindicated

Repeat endoscopy and assessment for EVL after 2 weeks, continue EVL every 2 to 3 weekly till varices are eradicated.

Plan for long term care of patients for underlying liver disease

GASTRIC OR DUODENAL ULCER

ULCER WITH ACTIVE SPURT/ SLOW OOZING/ VISIBLE VESSEL:

Inject around the ulcer 1:10000 Adrenaline diluted in saline + hemoclips/ thermal device (APC/ electrocoagulation)

FURTHER MANAGEMENT

Continue PPI infusion for 72 hours

Do relook endoscopy after 24 hours if index endoscopy showed active bleeding and if the endoscopic hemostasis was inadequate

If rebleeding:
Try another attempt to control with endotherapy

Failure to control bleeding:
Refer to higher centre where surgical treatment is available

TREATMENT AT DISCHARGE

Pantoprazole/ Omeprazole (40 mg) twice a day for 4 weeks.

Reconsider need for NSAIDs

Repeat endoscopy and ***H. pylori*** testing at 4- 6 weeks and appropriate treatment

PRESENTATION WITH HEMATOCHEZIA OR MELENA (BUT NO HEMATEMESIS) AND UGIE IS NORMAL

IF ACTIVE LOWER GI BLEEDING:
- **After stabilisation, if facility for colonoscopy available:**
  - Prepare bowel with polyethylene glycol solution before colonoscopy
  - Hemostasis can be achieved as in UGI bleeding
  - If colonoscopy is normal, consider small bowel evaluation
- **If facility for colonoscopy not available:**
  - Stabilise & refer to a centre with facility for surgery and colonoscopy

FURTHER MANAGEMENT

Continue I.V. antibiotics for 5 days or longer depending on the nature of infection

Rebleeding:
Refer to a centre with surgery/ angiography

If unidentified source on UGIE and colonoscopy, refer to higher centre

TREATMENT AT DISCHARGE

In case of infectious etiology continue oral antibiotics for a total of 10-14 days

RESTARTING OF ANTI PLATELETS/ ANTICOAGULANTS (IF INDICATED)
- After control of bleed: resume low dose Aspirin on day 1
- Other antiplatelets/ anticoagulants may be resumed by day 3-5
- Consultation with cardiologist should be taken

DISCHARGE CRITERIA

Hemodynamically stable	Heart rate <90/min	Patient is conscious	No bleeding for at least the past 72 hours (as indicated by no further fall in hemoglobin)

ABBREVIATIONS

APC: Argon plasma coagulation
EVL: Endoscopic variceal ligation
GI: Gastrointestinal
H. pylori: *Helicobacter pylori*
LFT: Liver function test
NSAIDs: Non-steroidal anti-inflammatory drugs
PPI: Proton pump inhibitor
TIPS: Transjugular intrahepatic portosystemic shunt
USG: Ultrasonography

☛ IN ELDERLY PATIENTS WITH GI BLEEDING, ENSURE THAT MALIGNANCY HAS BEEN RULED OUT

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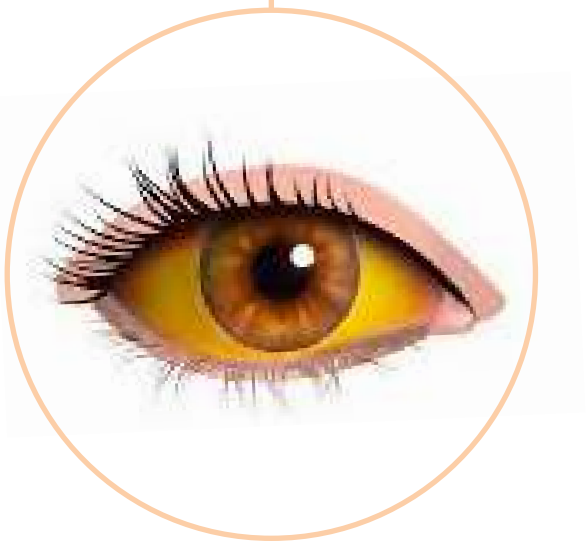
Standard Treatment Workflow (STW)

JAUNDICE

ICD-10-R17



SIGNS & SYMPTOMS

- Viral prodrome
- Loss of appetite/ nausea/ vomiting
- High coloured urine
- Pain abdomen
- Fever
- Itching, clay coloured stools

ESSENTIAL TESTS

SERUM BILIRUBIN > 1.5 mg/DL

Anorexia/ nausea/ vomiting
Viral Prodrome
↑LFT/SGOT/SGPT ↑↑
SAP ↑
USG: NO BILIARY DILATATION
PARENCHYMAL LIVER DISEASE (HEPATITIS)

Pain
Pruritus
Clay coloured stool
↑LFT/SGOT/SGPT ↑
SAP ↑↑
USG: BILIARY DILATATION
BILIARY OBSTRUCTION

DIFFERENTIAL DIAGNOSIS: COMMON CAUSES

JAUNDICE (ISOLATED RAISED BILIRUBIN)

- Hemolytic anaemia
- Congenital hyperbilirubinemia

OBSTRUCTIVE JAUNDICE

Benign:
- Common bile duct stone
- Biliary stricture

Malignant:
- Carcinoma gall bladder
- Carcinoma pancreas
- Peri-ampullary carcinoma
- Cholangiocarcinoma

PARENCHYMAL LIVER DISEASE

- Viral hepatitis
- Alcoholic hepatitis
- Drug induced hepatitis (eg: ATT)
- Autoimmune hepatitis

SYSTEMIC INFECTIONS (USUALLY WITH FEVER)

- Complicated malaria
- Enteric fever
- Dengue fever
- Scrub typhus
- Leptospirosis

SUPPORTIVE LAB EVIDENCE

- Isolated rise in bilirubin (indirect bilirubin > direct bilirubin)
- Normal values of SGOT, SGPT, SAP, GGT
- Normal ultrasonography of liver & biliary system

- Significantly elevated SAP (>4-5 X Upper limit of normal)
- Normal/ mildly elevated SGOT & SGPT
- Imageing show biliary obstruction

- Elevated SGOT & SGPT (usually >5 x Upper limit of normal; < 500 in alcoholic hepatitis)
- Viral markers/history of alcohol/hepatotoxic drugs

In appropriate clinical setting:
- Peripheral smear for malarial parasite or blood culture or widal test/ appropriate serology

MANAGEMENT

- **Hemolytic disease:** Start tablet Folic acid 5 mg once a day and refer to a hematologist
- **Congenital hyperbilirubinemia:** Reassurance & refer to higher center for confirmation
- Normal diet

- Start IV antibiotics if patient has fever and/or elevated TLC for suspected cholangi-tis
- Start IV fluids if patient dehydrated
- Refer to higher centre with facility for CT scan/MRCP for further work up
- Rx: ERCP/PTBD/Surgery
- Normal diet

- Maintain hydration
- Symptomatic Rx eg. antiemetics
- Normal diet
- Treat specific infectious illness
- Thiamine for alcoholic hepatitis
- AVOID ALCOHOL AND ALL NON PRESCRIPTION DRUGS

- Treat specific systemic infection
- Normal diet

REFERRAL TRIGGERS

INR >1.5 or rising INR- may be an early indicator of liver failure	Altered sensorium	Bleeding	Recurrent vomiting with dehydration	Hypotension (systolic BP <90 mmHg)

ABBREVIATIONS

ATT: Anti tubercular drugs
Bilirubin: Direct=conjugated, indirect=unconjugated
ERCP: Endoscopic retrograde cholangiopancreatography
LFT: Liver function test
GGT: gamma-glutamyl transferase
MRCP: Magnetic resonance cholangiopancreatography
PTBD: Percutaneous transhepatic biliary drainage
SAP: Serum Alkaline Phosphatase
SGOT: Serum Glutamic-Oxaloacetic Transaminase
SGPT: Serum Glutamic Pyruvic Transaminase
TLC: Total Leucocyte Count

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Standard Treatment Workflow (STW)

LIVER FAILURE

ICD-10 K72.90

ACUTE LIVER FAILURE OR ACUTE ON CHRONIC LIVER FAILURE

ACUTE LIVER FAILURE (ALF)
- Acute liver injury
- No underlying liver disease

ACUTE ON CHRONIC LIVER FAILURE (ACLF)
- Underlying liver disease
- Acute precipitating event

DIAGNOSTIC CRITERIA

- Jaundice < 4 weeks
- Encephalopathy
- Coagulopathy [INR ≥1.5]
- No evidence of prior chronic liver disease such as splenomegaly, ascites etc

- Jaundice (Bilirubin ≥ 5mg/dL) and coagulopathy (INR ≥ 1.5)
- Ascites/ Hepatic encephalopathy within 4 weeks of onset of jaundice; other organ failure
- Evidence of chronic liver disease

CAUSES

- **Primary liver disease:** Viral hepatitis, Drug induced hepatitis (e.g. ATT), Acute Fatty Liver of Pregnancy /HELLP syndrome, Poisoning
- **Systemic infection with secondary liver involvement:** Malaria, Leptospirosis, Typhoid, Rickettsial disease

  Suspect if:
  - Fever is a predominant symptom
  - Rash (Rickettsial)
  - Renal dysfunction
  - Anemia, thrombocytopenia, subconjunctival haemorrhage

- **Acute precipitating event:** Acute hepatitis, sepsis, GI bleeding, alcohol and drugs
- **Chronic liver disease:** Alcohol/ hepatitis B or C/ non-alcoholic fatty liver disease/ autoimmune liver disease/ Wilson's disease
- **Severity assessment of ACLF:** Additional organ failure indicates severe disease

INVESTIGATIONS

ESSENTIAL
- Hemoglobin, Leucocyte count (Total and Differential), Platelet count, Prothrombin time-INR
- Blood Sugar
- Liver function test, Blood Urea, Serum Creatinine, Sodium/Potassium
- Ascitic fluid analysis & culture
- Ultrasound abdomen

DESIRABLE
- Arterial blood gas and pH
- Blood NH_3 levels
- UGIE in ACLF

DIAGNOSTIC INVESTIGATIONS

- Primary liver diease- Serology: HBsAg, IgG Anti HBC, IgM anti-HAV, IgM anti HEV and anti HCV antibodies
- Systemic Infection- Work up for Malaria/ Typhoid/ Leptospira/Rickettsial infection in acute febrile illness

MANAGEMENT

Urgent referral to a higher centre after initial stabilization of patient/ if no improvement/ worsening despite therapy

PRIMARY TREATMENT/STABILIZATION:
- I.V. Fluids: Normal saline/Ringer's lactate (Add 50% dextrose if blood sugar low)
- O_2 supplementation if required
- Secure airway by tracheal intubation if grade 3-4 coma
- Antibiotics/ antimalarials depending on the clinical suspicion after taking blood culture
- Inj. Pantoprazole 40mg IV once a day for stress ulcer prophylaxis
- I.V. mannitol 20%, 100ml SOS for cerebral edema/grade 3-4 coma provided there is no renal failure in (ALF)
- IV infusion N-Acetylcysteine 150mg/kg in drug (induced ALF) over 1 hour
- Loading :150 mg/kg over 1 hour, 50 mg/kg over 4 hours
- Maintainence: 100 mg/kg over 16 hours every day

MANAGEMENT AT HIGHER CENTRE
(In addition to primary treatment)
- Admission in intensive care
- Supportive treatment
  - Prophylactic broad spectrum antibiotics after taking blood culture
  - Correct hypo-/hyper-kalemia
  - No role of prophylactic Fresh Frozen Plasma(FFP) for coagulopathy
- If hepatitis B: Tenofovir or Entecavir
- Acute Fatty Liver of Pregnancy/HELLP: prompt delivery
- Re-investigate to diagnose acute and chronic liver injury

- **If GI Bleeding: Refer to STW on GI bleeding**

TREATMENT AT HIGHER CENTRE

ORGAN FAILURE

1. Hypotension
- Fluid resuscitation 20ml/kg over 2 hours
- Maintenance fluid guided by hydration status and urine output
- If no response » Vasopressors: Noradrenaline I.V. infusion

2. Respiratory Failure
- O_2 inhalation
- Nebulization if bronchoconstriction
- May require ventilation

3. Acute renal failure
- Maintain fluid and electrolyte balance
- Stop diuretics, No NSAIDs
- In ACLF, Terlipressin: 1mg IV 6 hourly plus 20-40g albumin (20%) over 6-12 hours for volume expansion for suspected hepatorenal syndrome and not acute tubular necrosis
- May require dialysis

SEPSIS
- Fluid resuscitation
- I.V. antibiotics*:
  - For unidentified source : Broad spectrum antibiotics within an hour.
  - For SBP : IV Ceftriaxone 1g BD may be tried
- To prevent hepatorenal syndrome: IV Albumin 20-40g over 6-12 hours

** (The choice of antibiotics may vary depending on local sensitivity pattern and availability)*

ENCEPHALOPATHY
- Treat the underlying precipitating factor
- Usual care for comatosed patient
- Secure airway if grade 3-4 encephalopathy

FOR ACLF
- Syrup Lactulose 20-30ml 6 hourly, titrate dose to produce 3-4 stools/day
- Rifaximin 400mg TDS

ABBREVIATIONS

HELLP: Haemolysis, elevated liver enzymes, low platelet count
IgM anti-HAV: Immunoglobulin M antibody to hepatitis a virus
HBsAg: Hepatitis B virus surface antigen
IgM anti-HBc: Immunoglobulin M antibody to Hepatitis B core antigen
IgM anti- HEV: Immunoglobulin M antibody to hepatitis E virus
ATT: Anti-Tubercular treatment
INR: International normalised ratio
UGIE: Upper gastrointestinal endoscopy

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2022 EDITION

VOLUME III