Fulminant Liver failure- Summary of admission and management

On Admission:

1. ABC's
2. Bloods- see list. Liase with GI SpR- what is already done?
3. Usual unit admission paperwork
4. Drugs to be prescribed:
   Sedation for intubated patients: Propofol and Alfentanil
   Prophylaxis: All Intravenous
   Co-amoxiclav 1.2g tid
   (Pen allergic: Ciprofloxacin 400mg bd plus Vancomycin as per unit guideline)
   Fluconazole 400mg daily
   Ranitidine 50mg tid
   N-Acetyl cysteine- if Paracetamol as cause
   150mg/kg over 1 hour then 50mg/kg over 4hours then
   100mg/kg over 16hours- keep repeating this last infusion until Prothrombin time falling or transplanted

Admission Investigations
FBC, Full Clotting Screen
(APTT, INR, fibrinogen)
U+E, LFT's, Ca,Mg,PO4
Non urgent Ammonia in encephalopathic patients
Blood gas- NB glucose, lactate
Group and Save
Hepatitis Screen- Hep A,B,C,EBV,CMV
HIV status
ECG
CXR
Microbiology as appropriate

Systems Approach:

Document hourly BM's
Titrate sedation/ analgaesia to optimise synchrony with ventilator

RS:
Airway protection- depressed conscious level (GCS 8)
Goals- lowest FiO_2 to achieve PaO_2 >10, $PaCO_2$ 4.5 kPa

Post Admission Routine Investigations
Hourly (minimum): Blood Glucose
Twice Daily:
FBC, Clotting screen
Biochem as above
Others as indicated

CVS:
Monitoring: A line (L radial by preference) and CVP triple (RIJV)
Consider PA catheter (RIJV)- PAFC through AVA/MAC/ high volume line
Goals- MAP>60mmhg, CVP 5-10 initially. May require fluid, noradrenaline for vasodilated shock.

GI: NG tube if intubated- decompress stomach and allow NG feed

Renal:
Avoid hyponatraemia. Consider NAC made up in 0.9% saline
Urine catheter in ALL for hourly urine output
Renal Failure is common: Quinton Line in LIJV or Femoral Vein if needed and Haemofiltration with Lactate Free replacement fluid (Accusol). PT will determine anticoagulant requirement.

Liver/Haematology: bloods as per routine listed- keep Hb >80g/l

Coagulopathy:
A very important monitor of liver function and a transplant criterion.
ONLY TREAT IF REACH TRANSPLANT CRITERIA/BLEEDING UNCONTROLLABLY- DISCUSS CONSULTANT

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CNS

All patients: 30° Head Up, Tape (not ties) ETT, No compression of neck veins

Encephalopathy common- sedation not recommended - intubate and ventilate if depressed conscious level.

Raised ICP is a common cause of death and in intubated patient is not detectable until life threatening.

ICP Monitoring: consider insertion if intubated and reaches transplant criteria:

ICP Bolt Insertion

1. Aim for platelet count >100 and fibrinogen >1.7 prior to procedure

2. Coagulation management prior to insertion:

   FBC/Coag screen to lab on decision to insert ICP monitor
   ROTEM- before products given

   Platelets 80-100 1 bag platelets
   Platelets <80 2 bags platelets

   Fibrinogen 1.4-1.7 1 bag cryoprecipitate
   Fibrinogen <1.4 2 bags cryoprecipitate

   FFP 3 bags for all

May be necessary to remove extra fluid on CVVH to make room for this volume

3. Recheck FBP/Coag/ROTEM prior to ICP monitor insertion

Proceed if Platelet count >100 and fibrinogen >1.7

Management of raised ICP

ICP Goals:

ICP<20mmHg, CPP>60mmHg

ICP Control:

1. Head up position, etc as above
2. $PaCO_2$ in range 4.5-5.0 kPa
3. Hypertonic therapy
   - 1st line - 100ml 5% NaCl over 15min to maintain Na 140-145mmol/l
   - 2nd line - 200ml 20% Mannitol over 20min, if on CVVH remove 400ml over next hr

Serum Na and osmolality must be measured after 3 treatments and following each treatment thereafter. Alternatives to osmotherapy should be used if serum osmolality >320 mOsm/l

4. Moderate hypothermia 34°C
5. Thiopentone IVI 25mg/ml: 40ml/hr for 20min
   25ml/hr for 60min
   5-15ml/hr continuous

NB: Thiopentone infusion: Guided by EEG monitor to burst suppression
Watch for decreased MAP and CPP.