Standard operating policy (SOP)

Transjugular intrahepatic portosystemic shunt (TIPSS) pathway for variceal haemorrhage during the coronavirus (COVID-19) outbreak

1 Scope

This SOP applies to the multidisciplinary team involved in providing the TIPSS service, led by the hepatology department in Addenbrookes Hospital. It applies to external patients referred within the tertiary referral catchment area with variceal haemorrhage. Patients presenting via Addenbrookes Hospital will be managed in the standard way.

2 Purpose

To provide a referral pathway for patients with variceal haemorrhage warranting consideration of TIPSS during the coronavirus (COVID-19) outbreak.

3 Abbreviations

ITU	Intensive care unit
TIPSS	transjugular intrahepatic portosystemic shunt

4 Introduction

As per the British Society of Gastroenterology guidelines, TIPSS +/- coil embolisation is recommended for:

- Gastro-oesophageal variceal haemorrhage refractory to endoscopic and drug therapy (salvage TIPSS)
- Gastric varices that bleed despite endoscopic injection therapy
- Ectopic variceal bleeding refractory to local and drug therapy

Furthermore, the risk benefit ratio should be considered in patients with recurrent oesophageal variceal haemorrhage, and in patients with large or multiple gastric varices as first line therapy (1).

Refractory bleeding will be the most likely indication for TIPSS during the coronavirus (COVID-19) outbreak. The largest case series to date of salvage TIPSS for variceal haemorrhage reported a >70% 1-year survival for patients with Child's Pugh A/B cirrhosis, where death would be the expected outcome without intervention. In this group, the 1-year survival for patients who met

Bureau's criteria was 80% compared to 60% for patients who did not (Bureau criteria – bilirubin <50 µmol/L and plts<75 ×10(9)/L). Of note, the mortality rate in the 63 patients with a CPS 10–13 was 30% at 6 weeks and 65% at 12 months; whilst all 10 patients with a CPS 14–15 died within 6 weeks. Pre TIPSS length of intensive care unit (ITU) stay was an independent predictor of death (2).

The Addenbrookes Hepatology team lead a regional TIPSS service with ~15 patients receiving an emergency TIPSS each year for variceal haemorrhage. The established referral pathway consists of patient selection via the Hepatology consultant in communication with the Interventional Radiologist and subsequent inpatient transfer. In most cases there follows an ITU to ITU transfer, patients being intubated in the referring hospital with a sengstaken tube in situ.

During the coronavirus (COVID-19) outbreak it is anticipated that there will be a shortage of ITU capacity in Addenbrookes Hospital. The ideal scenario is that that patients requiring TIPSS will continue to follow the standard pathway i.e. ITU to ITU transfer on the proviso that they will be transferred back to the referring hospital within 48 hrs (feasibly 24 hrs of the TIPSS). However, it may be impossible to transfer patients for specialist care. A contingency plan is necessary to ensure that we can continue to provide lifesaving treatment for as many patients as possible - in the event of no ITU capacity, in highly select stable cases, emergency TIPSS will be offered without admission to Addenbrookes Hospital.

5 Scenario – reduced ITU capacity but still able to accept transfer of patients for TIPSS

- External patients with variceal bleeding will be referred to the Hepatology consultant/ SPR via the tertiary referral telephone service as is standard practice.

- Transfer for TIPSS will only be considered if:

    - Sufficient clinical information is provided by the referring hospital via an SPR/ consultant (gastroenterologist/ hepatologist where possible) to determine the risk benefit ratio of transfer.
    - The patient has had at least one endoscopy and adequate attempts have been made to control bleeding with endoscopic therapy.*
    - The patient has had a triple phase liver CT

  * Addenbrookes Hospital will not be providing a bleeding rota for patients presenting with variceal haemorrhage to external hospitals.

- Patients with organ failure will be unlikely to be transferred because of the increased risk of TIPSS in this setting with a lower chance of survival,

plus the impact of an unstable patient on ITU capacity including a longer length of stay.

- When the clinical picture is felt to favour TIPSS, the hepatology consultant/ SPR will discuss the case with the interventional radiologist in Addenbrookes Hospital. CT films will be reviewed at this stage to ensure the technical feasibility of TIPSS. If the CT films are insufficient to determine vessel patency an ultrasound Doppler may be necessary and must be performed before the decision to transfer is finalised.

- Only patients where TIPSS is thought to be clinically and technically possible will be accepted for transfer. Patients will be discussed with the duty JVF consultant to agree suitability for transfer and to ensure adequate critical care capacity exists.

- All patients **must** be intubated before transfer with a sengstaken in situ, and be accompanied by an anaesthetist/ intensivist in the ambulance (SPR or consultant).

- ITU to ITU discussion will facilitate transfer. The referring ICU has responsibility to ensure the patient is stable/ safe for transfer.

- After the TIPSS patients will be transferred back to the referring hospital as soon as possible – feasibly 24 hrs after the TIPSS, and ideally no more than 48 hrs after arriving in Addenbrookes Hospital. This may warrant communication between high level management. As per critical care network rules, patients must be transferred back to their base hospital within 48 hours of no longer requiring specialist care.

6 Scenario – no ITU capacity to accept patients for TIPSS

- External patients with variceal bleeding will be referred to the **hepatology consultant** via the tertiary referral telephone service as is standard practice.

- Transfer for TIPSS will only be considered if:

  - Sufficient clinical information is provided by the referring hospital via a **gastroenterology/ hepatology senior SPR/ consultant** to determine the risk benefit ratio of transfer.
  - The patient has had at least one endoscopy and adequate attempts have been made to control bleeding with endoscopic therapy.*
  - The patient has had a triple phase liver CT

* Addenbrookes Hospital will not be providing a bleeding rota for patients presenting with variceal haemorrhage to external hospitals.

- The following patients will be considered for TIPSS without admission to Addenbrookes Hospital:

    - Child's Pugh A/B cirrhosis
    - Haemostasis (endoscopic or via balloon tamponade)
    - Absence of clinical sepsis
    - Absence of clinical features of COVID-19 (but will be considered on a case by case basis)
    - No significant inotrope support – terlipressin +/- low dose noradrenaline driven by anaesthetic agents will not be a contraindication
    - No significant oxygen requirements
    - No renal failure
    - No significant lactaemia or acidosis
    - Absence of disseminated intravascular coagulation
    - TIPSS technically feasible

- When the clinical picture is felt to favour TIPSS, the **hepatology consultant** will discuss the case with the Interventional Radiologist in Addenbrookes Hospital. CT films will be reviewed at this stage to ensure the technical feasibility of TIPSS. If the CT films are insufficient to determine vessel patency an ultrasound Doppler may be necessary and must be performed before the decision to transfer is finalised.

- The **hepatology consultant** will liaise with the **Addenbrookes anaesthetic admin consultant** (available 24 hours a day on 07711 912283) to ensure patient suitability for TIPSS/safety of transfer/and Anaesthetic capacity sufficient.

- Only where TIPSS is thought to be clinically, technically and logistically possible will patients be accepted for TIPSS.

- **Anaesthetic consultant to anaesthetic/ ITU consultant** discussion will facilitate transfer. The referring ICU has responsibility to ensure the patient is stable/ safe for transfer.

- All patients **must** be intubated before transfer with a sengstaken in situ, and be accompanied by an anaesthetist/intensivist in the ambulance (SPR with sufficient experience or consultant). The external anaesthetist MUST stay with the patient for the duration of the TIPSS procedure and accompany the patient back to the referring hospital afterwards. The patient's ITU bed in the referring hospital will be not be given to another patient to enable transfer back the same day.

- Patients will be come directly to the interventional radiology department in Addenbrookes for a predetermined time slot during normal working hours or between 9am and 5pm at weekends. All patients will be reviewed by

the **consultant hepatologist** and the **Addenbrookes consultant anaesthetist** on arrival to ensure suitability for proceeding with TIPSS.

- Patients with PT>17 or platelets <50 will have FFP/platelets administered prior to transfer. A group and save will be sent in Addenbrookes Hospital before the TIPSS.

- The TIPSS will then be performed as soon as possible. The Addenbrookes anaesthetist will assist and be present for the duration of the procedure, in addition to the referring hospital Anaesthetist. Standard Epic documentation will be completed. The CUH SOP for patients in the angiography suite during COVID-19 will be followed including CUH PPE guidance for all those in attendance.

- Afterwards, the patient will be transferred back as soon as possible (the same day) to the referring hospital ITU accompanied by the same external anaesthetist, still intubated and with a sengstaken in situ.

- The expectation is that patients will not enter the ITU department.

- Follow up Doppler ultrasound to determine TIPSS patency will be performed in the referring hospital at day 7 post TIPSS, and then 6 monthly long term.

- We will be unlikely to be able to accept patients for TIPSS venograms who rebleed post TIPSS during the same hospital admission.

7 Responsibilities if patients brought for emergency TIPSS without admission to Addenbrookes Hospital

The referring hospital will be responsible for the following:

- Emergency endoscopy by a Gastroenterology/Hepatology Consultant with appropriate training to manage variceal haemorrhage; and appropriate efforts to achieve haemostasis through endoscopic band ligation or injection therapy. The endoscopy will not be repeated in Addenbrookes Hospital.
- Triple phase CT liver +/- Doppler ultrasound to ensure technical aspects of TIPSS
- ITU management including intubation and sengstaken tube insertion
- Provision of accurate information to the Addenbrookes team to allow determination of risk benefit ratio of TIPSS – via external gastroenterology/ hepatology consultant (or senior SPR) to Hepatology Consultant discussion
- Ensuring stability of patients
- Risk assessing the likelihood of deterioration during transfer or peri-TIPSS

- Safety of patients during transfer by ambulance both to and from Addenbrookes – the external anaesthetist must stay with the patient for the duration of the TIPSS procedure
- Effective communication with the patient's relatives before transfer, including explanation of the risk of deterioration/ death whilst in the ambulance or in Addenbrookes Hospital. Effective communication with realtives after TIPSS including in the event of deterioration/death if not admitted to the Addenbrookes ITU.
- The patient's ITU bed in the referring hospital will not be given to another patient to enable transfer back the same day
- TIPSS surveillance long term

The Addenbrookes Hepatologist will be responsible for the following:

- Patient selection
- Communication with the multidisciplinary team and coordination of the TIPSS
- Assessment of patient on arrival to Addenbrookes Hospital to determine risk benefit ratio of proceeding with TIPSS

The Addenbrookes Interventional Radiologist will be responsible for the following:

- Reviewing imaging before transfer to determine technical aspects of TIPSS and aid decision making for patient selection
- The TIPSS procedure

The Addenbrookes Anaesthetist will be responsible for the following:

- Liaising with the referring Anaesthetist to confirm stability of patient and safe transfer
- Sending group and save in Addenbrookes if not already sent
- Assisting with the TIPSS and preparing the patient for transfer back to the receiving hospital (but not physically making the transfer)
- Assisting in the event of patient deterioration and liaising with Addenbrookes intensive care team

8 Risk

There is a risk that patients will deteriorate unexpectedly on the way to Addenbrookes Hospital or peri-TIPSS procedure. The patient's relatives will be sufficiently counselled by the referring team with regards the risk of deterioration/ death. In the event of deterioration, patients may be too unstable to be transferred back to the referring hospital and require admission to an ITU bed. All possible steps will be taken to avoid this scenario.

The service will also rely on ambulance provision in a timely manner.

9 Monitoring compliance with and the effectiveness of this document

Jo Leithead (portal hypertension lead) and Bill Griffiths (Hepatology clinic lead) will monitor all patients brought for emergency TIPSS without admission to Addenbrookes Hospital.

In the event of deterioration/death on transfer or peri-TIPSS, including need for admission to Addenbrookes critical care, there will be a careful review of the case by the multi-disciplinary team.

If the referring hospital has not complied with the referral pathway, there will be escalation to senior management to facilitate feedback.

The monitoring team will make the decision to terminate the service in the event of repeated incidents.

10 References

1. Tripathi D, Stanley DJ, Hayes PC, et al. Transjugular intrahepatic portosystemic stent-shunt in the management of portal hypertension. Gut; Epub ahead of print.
2. Maimone S, Saffioti F, Filomia R, et al. Predictors of re-bleeding and mortality among patients with refractory variceal bleeding undergoing salvage transjugular intrahepatic portosystemic shunt (TIPS). Dig Dis Sci 2019; 64(5):1335-45.

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Document management

Approval:	Bill Griffiths – 18 April 2020		
JDTC approval:	n/a		
Owning department:	Hepatology		
Author(s):	Dr J Leithead; Dr B Griffiths; Dr T See; Dr B Andreatta; Dr A Johnston		
Pharmacist:	n/a		
File name:	TIPSS pathway during coronavirus (COVID-19) outbreak version1 Apr 2020		
Supersedes:	n/a (new document)		
Version number:	1	Review date:	April 2023
Local reference:		Document ID:	101539